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ORIGINAL ARTICLE

Effects of COVID-19 confinement on the patients of the Balearic Multiple Sclerosis Association

Noelia López Ramón^{a,b,c,*}, Joana Ripoll Amengual^d, M. Clara Vidal-Thomàs^d, Isabel Gayá Gomila^e, Isabel Manzanares Tellez^f

^a Hospital Universitario Son Espases, Palma de Mallorca, Spain

^b Departamento de Infermería i Fisioteràpia, Universitat de les Illes Balears, Palma de Mallorca, Spain

^c Instituto de Neurociencias, Hospital Clínic de Barcelona, Barcelona, Spain

^d Unidad de Investigación de Atención Primaria de Mallorca, Servei de salut de les Illes Balears, Instituto de Investigación de les Illes Balears (IdISBa), Palma de Mallorca, Spain

^e Asociación Balear de Esclerosis Múltiple, Palma de Mallorca, Spain

^f Unidad de Epilepsia, Hospital Clínic de Barcelona, EpiCare: European Reference Network for Epilepsy, Institut D'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Barcelona, Spain

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KEYWORDS

COVID-19;
Multiple sclerosis;
Patients support
group;
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Abstract

Introduction: Multiple Sclerosis is a neurodegenerative and inflammatory illness diagnosed in young adults. Domiciliary confinement for the Sars-Cov-2 pandemic was a situation that generated isolation, lack of activity and an alteration of sanity and associative services. This diminution of activity could generate an alteration on this health and quality of life.

Objectives: The aim of this study is to know changes in physical, cognitive, emotional and social states in patients from the Balearic Association of Multiple Sclerosis during confinement of Sars-Cov-2 pandemic. In addition to describe the adaptations of health and associative resources during this period.

Methodology: Cross-sectional descriptive study. All ABDEM patients diagnosed with MS were included. An ad-hoc questionnaire with Likert-type response options was administered.

Results: A total of 102 surveys were obtained. 69.6% of the participants were women, 49% aged 35–44 years, mean age 41.3 (10.9). 48% were in active employment and 47.1% had been diagnosed with the disease for between 3 and 10 years, mean 11.2 (8.3). 23.3% showed worsening fatigue, 13.4% greater mobility disturbances and 14.8% more pain. 21.1% had increased concentration problems. 11.3% had symptoms of anxiety. Hospital service adaptations were evaluated with 94.9% satisfaction, primary care with 88% and ABDEM with 97.9%.

Conclusion: This study described an alteration in physical, cognitive, emotional and occupational symptoms during the confinement phase of COVID. MS patients require cross-cutting care plans that can meet their needs despite crisis situations such as those experienced during the pandemic.

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* Corresponding author.

E-mail address: noelia.lopez@ssib.es (N. López Ramón).

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The different adaptations made by health services and associations working with people with MS were also presented. These services responded satisfactorily to the needs shown by patients in confinement. Nevertheless, it is important to analyse these situations so that health organisations can respond to the needs of patients in times of crisis.

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PALABRAS CLAVE

COVID-19;
Esclerosis múltiple;
Asociación de
pacientes;
Servicios sanitarios

Efectos del confinamiento por COVID-19 en los pacientes de la Asociación Balear de Esclerosis Múltiple

Resumen

Introducción: La esclerosis múltiple (EM) es una enfermedad neurodegenerativa y desmielinizante, diagnosticada en adultos jóvenes. La situación de confinamiento por la pandemia de Sars-cov-2 supuso una situación de aislamiento y falta de actividad además de una alteración de los servicios sanitarios y asociativos. La disminución de la actividad tanto física como cognitiva podría derivar en una alteración en su salud y calidad de vida.

Objetivos: Conocer las variaciones en el estado físico, cognitivo, emocional y social de los pacientes de la Asociación Balear de Esclerosis Múltiple (ABDEM) durante el confinamiento por la pandemia de Sars-Cov-2. Describir las adaptaciones de los recursos sanitarios y asociativos en este período.

Metodología: Estudio descriptivo transversal. Se incluyó a todos los pacientes diagnosticados de EM de ABDEM. Se administró un cuestionario ad-hoc con opciones de respuesta tipo Likert.

Resultados: Se obtuvieron 102 encuestas. Un 69,6% de los participantes eran mujeres, un 49% de 35–44 años. La media de edad fue de 41,3 (10.9). Un 48% estaban en situación laboral activa y un 47,1% llevaban entre 3 y 10 años de diagnóstico de la enfermedad, con una media de 11.2 (8.3). Un 23,3% mostraron empeoramiento de fatiga, un 13,4% mayores alteraciones de movilidad y un 14,8% mayor dolor. Un 21,1% incrementaron problemas de concentración. Un 11,3% tuvieron síntomas de ansiedad. Las adaptaciones de servicios hospitalarios fueron evaluadas con un 94,9% de satisfacción, los de atención primaria con un 88% y ABDEM con un 97,9%.

Conclusión: Este estudio describió una alteración en los síntomas físicos, cognitivos, emocionales y laborales durante la fase de confinamiento del COVID. Los pacientes con EM precisan de planes de cuidados transversales que puedan cubrir sus necesidades incluso de las situaciones de crisis como las vividas por la pandemia.

También se conocieron las diferentes adaptaciones que hicieron los servicios sanitarios y asociativos que trabajan con personas con EM. Estos servicios respondieron satisfactoriamente a las necesidades que mostraron los pacientes en el confinamiento. Pese a ello, es importante analizar estas situaciones para que las organizaciones sanitarias puedan responder a las necesidades de los pacientes en tiempos de crisis.

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Introduction

Multiple sclerosis (MS) is a chronic, autoimmune, demyelinating, and degenerative disease of the central nervous system. It is estimated that around 55,000 people in Spain have this disease, which is mainly diagnosed in adults between the ages of 20 and 40. This makes MS the disease that causes the most disability in young adults.¹

The most common form of MS is relapsing-remitting, in which the activation of the inflammatory process that causes myelin loss is commonly referred to as a 'flare-up'.

The initial goal of drug therapy is to control this activity in order to slow down flare-ups and thus prevent cumulative disability.² This disease presents a variety of symptoms, the most common of which are motor, sensory, or visual disorders. Fatigue, cognitive impairment, balance issues, spasticity, urinary problems, and sexual dysfunction are also very common.³

Therefore, although these patients have different individual characteristics, they share the fact that physical activity and cognitive stimulation can improve their clinical condition, quality of life, and emotional health.⁴

There are various instruments for measuring the consequences of the disease. One notable example is the Expanded Disability Status Scale, which measures the cumulative disability caused by MS and has been adapted to Spanish.⁵

Following the identification of the SARS-CoV-2 virus in China⁶ in January 2020 and its subsequent global spread, Spain declared a state of emergency on 14 March 2020. This required the population to remain in lockdown at home to contain spread of the virus and mitigate its health impact.⁷ The SARS-CoV-2 pandemic resulted in structural changes in the healthcare system to adapt services and maintain adequate care for chronic patients.

Lockdown resulted in isolation and lack of activity, with physical, cognitive,⁸ and emotional consequences, as well as consequences for social relationships. There were also concerns about the economic and employment situation resulting from lockdown.⁹ A similar situation was observed for other neurodegenerative diseases, such as Parkinson's, which were associated with a decline in quality of life and increased levels of anxiety, stress, and depression.¹⁰

The situation required the reorganisation of primary care, with the creation of various circuits for face-to-face, telephone, and home care to support chronic patients. Emergency care was maintained, and patients with respiratory disease were monitored at home, among other measures.¹¹ Hospital consultations also closed to face-to-face visits and telephone care was centralised for neurological patients, among others. The hospital pharmacy and day hospital services circuits were changed.

The Balearic Multiple Sclerosis Association (ABDEM) offers services for patients in the early stages of diagnosis when they enter a phase of stability and chronicity, where a multidisciplinary team addresses any personal difficulties in the autonomy care programme. It also has a day centre offering comprehensive support to people with extensive and generalised support, providing respite to their families and direct carers, and other volunteer programmes, accompaniment, and even housing support programmes. This team of professionals also adapted to the new situation and provided telematic care, as well as offering information to members and monitoring their needs virtually.¹²

A lack of physical and cognitive activity can affect people with this condition, impacting both the disease itself and the social and work situations that the lockdown and vulnerability in the labour system could have triggered.¹ This study aims to explore how lockdown and the impact of the pandemic on the healthcare system may have affected people with MS.

Objectives

The aim is to assess changes in the physical, cognitive, emotional, social, and employment status of people with MS during the period of lockdown due to the SARS-CoV-2 pandemic.

The study also aimed to determine how patients with MS used health and association services during the lockdown and how satisfied they were with these services' responses.

Method

A descriptive cross-sectional study was conducted. All ABDEM members diagnosed with MS and aged over 18 were invited to participate. A Google Forms® questionnaire was created and sent to the association's 328 patients. Along with the questionnaire link, participants received the study information sheet and informed consent form. Data collection took place in June 2020, when the lockdown restrictions were being eased.

The variables were classified into the following categories:

- Sociodemographic and disease-related factors: sex, age, employment status, household members, need for adapted housing or carer. MS diagnosis: degree according to EDSS scale, disease-modifying drug, years of progression, types of physical or cognitive symptoms that increased during lockdown, onset of flare-ups and therapy adherence.
- Physical, cognitive, and emotional health changes: symptoms of fatigue, mobility problems, sensitivity, pain, urinary and faecal continence problems, sexual problems, concentration and processing speed problems, fear of flare-ups or COVID-19 infection, difficulty maintaining habits. The GAD7 scale was also used to measure anxiety.¹³
- Socio-occupational situation: sick leave, temporary redundancy plan (ERTE), adaptations, or dismissals.
- Health and association services: type of consultation (telephone or in person), access to medication, access to virtual psychological therapy or physiotherapy. Final degree of satisfaction with health and association services.

In terms of statistical analysis, a descriptive analysis of the variables was performed. Information on qualitative variables is presented using absolute and relative frequencies (percentages), while quantitative variables are presented using means and standard deviations. The analysis was performed using IBM SPSS Statistics v26 statistical software²⁶.

The study was conducted in accordance with the principles of the Declaration of Helsinki and the ICH guidelines for good clinical practice, and in full compliance with the relevant legal authorities. Processing, communicating, and transferring the personal data of all participating subjects complied with the provisions of Organic Law 3/2018 of 5 December on the protection of personal data and the guarantee of digital rights. Approval was obtained from both the Primary Care Research Commission of Mallorca and the Research Ethics Committee of the Balearic Islands (approval number IB 4260/20).

Results

A total of 102 people responded to the questionnaire (31% of those invited to participate). The majority of participants were women (69.6%) and the mean age was 41.3 (10.9). The most prevalent age group was 35–44 (49%). Many of these people were in active employment at the time of

Table 1 Sociodemographic and household data.

Sociodemographic data	N (%)
Sex	
Female	71 (69.6)
Male	31 (30.4)
Age	
Under 35	21 (20.6)
35–44	50 (49.0)
45–54	19 (18.6)
55 or over	12 (11.8)
Employment status	
Active	49 (48.0)
Unemployed/temporary redundancy plan/on sick leave	23 (22.5)
Disability/other	30 (29.4)
People in the household	
Alone	8 (7.8)
<3 people	73 (71.6)
≥3 people	21 (20.6)
Housing adaptation	
Fully adapted	5 (4.9)
Minor adaptation	17 (16.7)
No adaptation	80 (78.4)
Assistance with activities of daily living	
Considerable assistance	19 (18.6)
Minimal assistance	10 (9.8)
No assistance	73 (71.6)

the study (48%) and lived with several people (71.6%). Only 18.6% needed a carer or home adaptations (4.9%), as shown in [Table 1](#).

In terms of therapy, almost half of the patients were taking a second-line drug (49%), which is administered in hospital, and a quarter of them were not taking a disease-modifying therapy (24.5%). Of the participants, 47.1% had been diagnosed between 3 and 10 years ago, 40.2% more than 10 years ago, and 12.7% less than 3 years ago. The mean number of years since diagnosis was 11.2 (8.3). One-third (34.7%) of the sample had a disability with and EDSS score greater than 4. Eight-point eight percent required medication for motor symptoms and 4% for spasticity ([Table 2](#)).

The physical symptoms that increased the most during lockdown were fatigue (23.3%), strength problems (15.5%), pain (14.8%), and mobility problems (13.4%). The most notable cognitive symptoms were concentration (21.1%) and processing speed problems (19.1%). The most relevant emotional disturbances were uncertainty about their employment situation (37.1%), concern for the health of a family member (35.4%), being unable to leave the house (31.3%), and not having loved ones nearby (30.9%). Fear of being unable to access healthcare services in the event of a flare-up was reported by 14.7% of respondents. The GAD-7 anxiety scale revealed that 11.3% of participants experienced severe anxiety, while 55.7% reported anxiety at some point during the lockdown ([Figs. 1 and 2](#)).

Table 2 Clinical characteristics of the disease.

Data on multiple sclerosis	N (%)
Disease-modifying therapy for MS	
1st line	27 (26.5)
2nd line	50 (49.0)
No disease-modifying medication	25 (24.5)
Duration of MS	
<3 years	13 (12.7)
3–10 years	48 (47.1)
>10 years	41 (40.2)
EDSS score	
≤4	32 (65.3)
>4	17 (34.7)
Disease situations	
Requirement for isolation	
Yes	35 (34.7)
No	66 (65.3)
Medication for motor symptoms	
Yes	9 (8.8)
No	93 (91.2)
Medication for spasticity	
Yes	4 (4.0)
No	97 (96.0)

Table 3 Work-related changed during lockdown.

Work situations	Yes N (%)	No N (%)
Need for work adaptation	17 (24.3)	53 (75.7)
Adaptation by the company	34 (50.7)	33 (49.3)
Telework	29 (42.0)	40 (58.0)
Tools for telework	8 (16.0)	42 (84.0)
Temporary redundancy situation	15 (20.8)	57 (79.2)
Dismissal situation	2 (2.8)	70 (97.2)

[Table 3](#) shows the different work situations resulting from lockdown. Twenty-four point three per cent needed work adjustments, although only 50.7% of them were provided these adjustments by their company. Forty-two per cent worked from home, and of these, 16% obtained the necessary tools from their company. As for temporary redundancy (ERTE), 20.8% found themselves in this situation, and 2.8% faced dismissal.

[Table 4](#) shows the use of health and association services by participants during the study period, as well as their satisfaction with the response of these services. In terms of hospital setting, 88% of the participants were able to contact the neurology nurse without any problems, and 81.3% the neurologist. Eighty-four point four per cent contacted the pharmacy service and 86.8% continued to take their medication as prescribed. Seven percent suffered a flare-up during lockdown, and of these, 66.7% were able to be treated quickly by the neurology service. Five point nine per cent required rehabilitation/physiotherapy. Twelve point nine per cent thought that the problems that arose

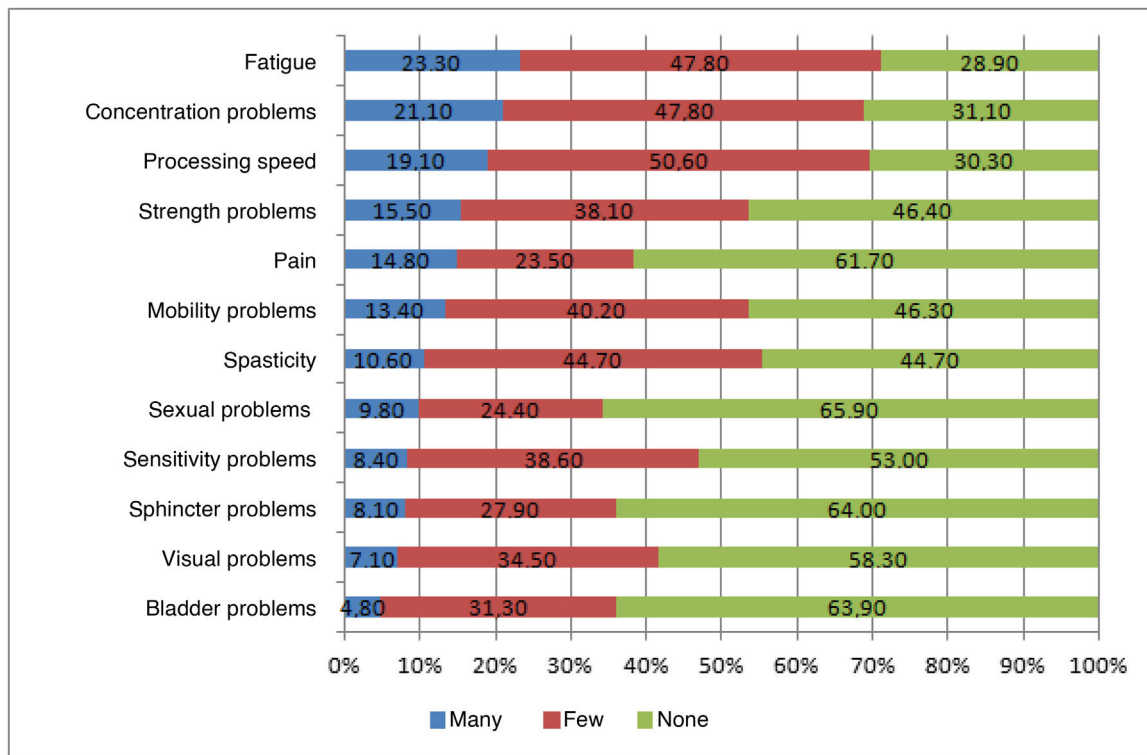


Figure 1 Physical and cognitive changes.

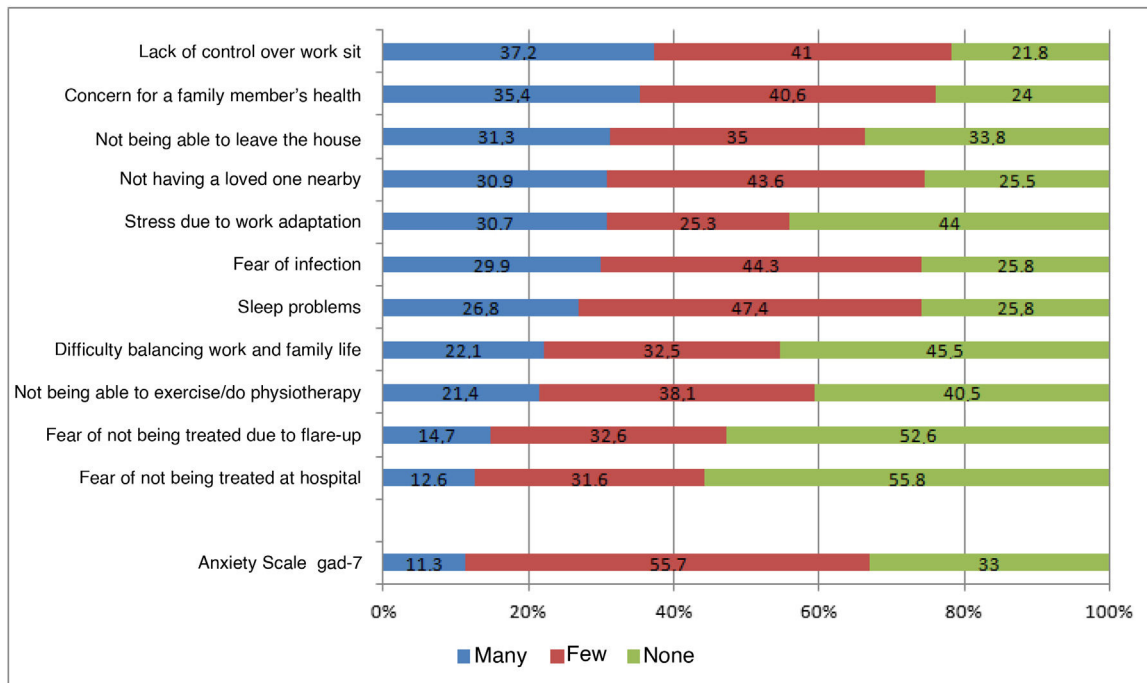


Figure 2 Emotional changes.

were related to the recommendation not to go to hospital during the pandemic. Ninety-four point nine per cent were satisfied with the care they received from hospital professionals. With regard to primary care, care was preferably provided by telephone. Sixty per cent needed to contact

their doctor or nurse, and of these, 76.7% had no problem doing so. The consultations were to resolve issues related to both electronic prescription renewals (54.9%) and medication for MS symptoms (39.4%), to request sick leave (25.8%), and to collect medication from the health centre (25.5%).

Table 4 Use of and satisfaction with hospital services, PC, and ABDEM.

Hospital services	Yes N (%)	No N (%)
Need to go to day hospital	25 (24.8)	76 (75.2)
Need for a family member to go to the hospital pharmacy	37 (37.8)	61 (62.2)
Contacting the pharmacy with questions about treatment	65 (84.4)	12 (15.6)
Correct therapeutic adherence	79 (86.8)	12 (13.2)
Request for home delivery of medication	17 (26.6)	47 (73.4)
Use of neurology consultation	65 (81.3)	15 (18.8)
Use of neurology nurse consultation	73 (88.0)	10 (12)
Satisfaction with hospital services	75 (94.9)	4 (5.1)
Primary care services	Yes N (%)	No N (%)
Use of primary care team consultation	60 (60.0)	40 (40.0)
Telephone consultation	56 (76.7)	17 (23.3)
Collection of MS medication at the health centre	13 (25.5)	38 (74.5)
Renewal of medication via electronic prescription	37 (39.4)	57 (60.6)
Need for sick leave	23 (25.8)	66 (74.2)
Home visit	6 (6.3)	89 (93.7)
Telephone consultation with nurse	8 (10.8)	66 (89.2)
Satisfaction with primary care services	74 (88.0)	10 (12.0)
ABDEM resources	Yes N (%)	No N (%)
Use of psychological therapy	24 (24.7)	73 (75.3)
Therapy via videoconference	23 (46.9)	26 (53.1)
Therapy via telephone	31 (72.1)	12 (27.9)
Physiotherapy	34 (35.8)	61 (64.2)
Physiotherapy via videoconferencing	23 (48.9)	24 (51.1)
Received information about COVID and resources	91 (92.9)	7 (7.1)
Information received by email	27 (30.0)	63 (70.0)
Information received via social media	85 (88.5)	11 (11.5)
Satisfaction with ABDEM services	95 (97.9)	2 (2.1)

Only 6.3% required a home consultation. Satisfaction with the care received in primary care was positive in 88% of cases. As for the services provided by ABDEM, a quarter of the patients required psychological therapy (24.7%), which was mainly provided by telephone (72.1%) or videoconference (46.9%). Those who needed physiotherapy (35.8%) received it via videoconference (48.9%), with 10.6% of video calls reporting difficulties in carrying it out, or needing help from a carer (34.9%). To keep the population informed, an information campaign (92.2%) was carried out via email (30%) and social media (88.5%). There was a high level of satisfaction with the services provided by ABDEM (97.9%).

Discussion

This study evaluated changes in the physical, cognitive, emotional, and social status of people with MS belonging to the ABDEM association, as well as their opinions on the response of health services to the lockdown situation caused by the SARS-CoV-2 pandemic. The data reveal changes in the perception of fatigue, mobility problems, and some cognitive problems. In the social sphere, there were moments

of anxiety or changes in adapting to the workplace. Satisfaction with health services and the association was high, indicating a high level of resilience within our setting.

As in the study by Zabay-Neiro et al.,¹⁴ which covers a similar population at the Multiple Sclerosis Foundation in Lleida, the vast majority of the study population is young, with little disability, and an active employment status.

Of all the physical alterations reported, the increase in fatigue (23.3%) and mobility problems (13.4%) are particularly notable. When compared with the sample in the study by Zabay-Neiro et al., we see that this manifestation is relevant, as they report fatigue in 50%–70% of cases and relate it to physical activity. Cardiovascular and resistance exercise is very useful for alleviating fatigue if performed in combination, as can be seen in this meta-analysis published in the journal *Archives of Physical Medicine and Rehabilitation*.¹⁵ Despite the lockdown, ABDEM continued to offer online exercise programmes tailored to different groups of patients according to their functionality. The perception of chronic pain also increased, by up to 14.8%. Other studies relating to lockdown and pain, such as that by Luque-Pérez et al.,¹⁶ link decreased physical activity with increased pain and low perception of quality of life one year after lockdown. This

phenomenon is also described in meta-analyses such as that by Thibaut Demaneuf et al.,¹⁷ which emphasise exercise as a way of improving chronic pain. In our study, we measured the increase in pain during a period of low physical activity, so the increase in pain could be related to the low level of physical activity undertaken during lockdown.

Concentration and processing speed problems increased in around 20% of the sample. Comparing these results with other studies of the Spanish population during lockdown, such as that by Giménez -Llort et al.,¹⁸ which found 15.1% of patients with cognitive fatigue, we conclude that in these circumstances, cognitive problems in MS may be exacerbated by increased fatigue.

Lockdown also caused mental health problems. Anxiety (11.3%), fear of infection (29.9%), and lack of desired healthcare (26.8%) affected the patients in the study. This phenomenon was observed in the two aforementioned Spanish studies, and as well as in cross-sectional primary care¹⁹ and public health²⁰ studies.

The potential consequences of the pandemic could have on the workplace were also a major concern for the patients surveyed. Studies such as that by Zhang et al.²¹ measured workplace changes at a general level, recording 15% in the Spanish population compared to 19.2% in the Chinese population. In our study, we examined the work-related changes found, observing that 50.7% of these people required work adaptations and 42% required teleworking. Only 2.8% were dismissed, and 20% reported a temporary redundancy plan. Supporting the workplace integration of people with MS is part of modern care strategies, as demonstrated by the MS International Federation.²²

Overall satisfaction with hospital services was observed (94.9%). Many patients needed to attend the hospital on a daily basis (24.8%), where most MS drugs with immunosuppressive effects are administered. We consider this an important factor, as other studies, such as that by Lleixa Sarda et al.²³ reported that 35% of the cases surveyed had missed their intravenous medication appointments, and 15% had discontinued their immunomodulatory therapy. In our study, we found similar data on therapy adherence, with only 13.2% of cases reporting that it was not followed correctly. The use of neurological nursing consultations was high (88%), also shared with neurology consultations in 81.3% of cases. Seven per cent of respondents reported having had an MS flare-up during lockdown. These phenomena are consistent with the aforementioned study, in which telephone service hours were extended and hospital visits were reorganised so that all consultations could be carried out on the same day. Regarding other situations within hospitals, 37.8% of respondents needed a family member to go to the hospital for them to collect medication, and 84.4% needed concerns addressed. In other autonomous communities, pharmacy services developed a home delivery service for medication, as detailed in the study by Peláez Bejarano et al.²⁴ so that chronic patients could have access to hospital-dispensed drugs during lockdown.

Satisfaction with primary care was high, with 88% of respondents expressing satisfaction. The tools that stood out were mainly telephone consultations (76.7%) and automatic renewal of electronic prescriptions (39.4%). These tools were adopted by primary care centres during the pandemic, as reported in the study by Coll Benejam et al.²⁵ This

study highlights the structural changes that had to be made in health centres.

Patient associations played a significant role in providing support and advice, a role that was amplified during the COVID-19 pandemic. In fact, other associations, such as that in Granada (AGDEM), also assessed the impact of lockdown, as seen in the study by Ruiz-Maresca et al.,²⁶ which evaluated the changes that occurred in the association's patients during the first 30 days of lockdown. At ABDEM, as in all institutions and entities, telematic work was prevalent, both for psychological interventions, in 24.7% of cases, and for rehabilitation therapies, in 35.8% of cases. Studies such as that by Zabay-Neiro et al., mentioned above, also used these services. At ABDEM, they also received information on COVID-19-related situations specific to MS, as there was a great deal of fear of contagion at the beginning of the pandemic. The association responded and adapted to the pandemic swiftly and decisively, achieving the highest user satisfaction of the three services evaluated, at 97.9%.

Several international studies have been conducted to assess the impact of the lockdown on the quality of life of MS patients. One example is the study carried out by Henson et al.²⁷ with the Australian MS longitudinal study cohort, which measured COVID-19-related adversity in relation to their health status and the Assessment of Quality of Life-Eight Dimensions (AQoL-8D). A total of 1666 participants responded. It was observed that the severity of disability was strongly associated with higher adversity ratings ($P < .01$).

A notable strength of our study is that it was carried out by the primary care management of the Balearic Islands Health Service in collaboration with ABDEM, a patient association with experience and commitment. Over the years, synergies have been created between the two institutions, such as collaboration on the Pacient Actiu programme²⁸ and various jointly held awareness-raising conferences on the disease. This has meant that when requesting support for the study, the relationship between both institutions has been strengthened and an alliance created for future projects. We believe it is important to highlight this, as the plans to humanise the healthcare system propose putting the patient at the centre of the system,²⁹ and having a patient association contributes to this. Another strength worth highlighting is the role of nurses in neurology services, as there was a great deal of uncertainty about how COVID-19 infection could affect patients with MS, and the management of the disease and support provided them by these professionals during those stressful times was remarkable.²³

The limitations of this study include the information biases inherent in survey methodologies, such as inaccurate recall or misleading responses. As this is a descriptive cross-sectional study, it is not possible to explore the relationship between variables in depth or to measure the real impact of change as would be possible a longitudinal study. As this study describes a specific sample, the conclusions drawn are limited to that sample and cannot be extrapolated to other populations in different contexts.

Conclusion

This study has shown how MS patients from the ABDEM association experienced different situations during the lockdown

period in terms of their health status and use of health and association services.

The symptoms that increased most during lockdown were fatigue, pain, mobility problems, and cognitive fatigue. Anxiety caused by being isolated at home was the main trigger for emotional problems, with fear of infection or lack of healthcare being the most prominent factors. In the workplace, adjustments such as teleworking were implemented, and there were few cases of temporary redundancy plans or dismissals.

Healthcare services adapted consultations and day hospital services, as well as other related hospital services, to the great satisfaction of patients. Primary care also changed, with telephone consultations being introduced, and situations such as sick leave and the dispensing of medication to health centres being handled. These services were well received by patients. ABDEM provided psychological and rehabilitation consultations by telephone and telematically, as well as disseminating information about the virus, which patients appreciated.

The collaboration between ABDEM and various departments of the Balearic Islands Health Service was key to carrying out this work, and it is also one of the pillars of continuity of care for these patients within the healthcare system. The scenario presented by the COVID-19 pandemic should prompt healthcare and social care professionals to reflect on how to improve in the areas identified, with health policies that protect the cogs in the wheel of public health, and from which we must learn for future situations.

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Declaration of competing interest

The authors have no conflict of interests to declare.

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References

- Meca-Lallana JE, Martínez Yélamos S, Eichau S, Llaneza MÁ, Martín Martínez J, Peña Martínez J, et al. Consensus statement of the Spanish Society of Neurology on the treatment of multiple sclerosis and holistic patient management in 2023. *Neurologia (Engl Ed)*. 2024;39:196–208, <http://dx.doi.org/10.1016/j.nrleng.2024.01.003>. Epub 2024 Jan 16. PMID: 38237804.
- Fernández O, Montalbán X, Agüera E, Aladro Y, Alonso A, Arroyo R, et al. XVI Reunión Post-ECTRIMS: revisión de las novedades presentadas en el Congreso ECTRIMS 2023 (I) [XVI Post-ECTRIMS Meeting: review of the new developments presented at the 2023 ECTRIMS Congress (I)]. *Rev Neurol*. 2024;79:21–9, <http://dx.doi.org/10.33588/rn.7901.2024170>. Spanish. PMID: 38934946; PMCID: PMC11468034.
- Soelberg Sorensen P, Giovannoni G, Montalbán X, Thalheim C, Zaratin P, Comi G. The multiple sclerosis care unit. *Mult Scler*. 2019;25:627–36, <http://dx.doi.org/10.1177/1352458518807082>. Epub 2018 Oct 23. PMID: 30351211; PMCID: PMC6439947.
- Edwards T, Michelsen AS, Fakolade AO, Dalgas U, Pilutti LA. Exercise training improves participation in persons with multiple sclerosis: a systematic review and meta-analysis. *J Sport Health Sci*. 2022;11:393–402, <http://dx.doi.org/10.1016/j.jshs.2021.07.007>. Epub 2021 Jul 27. PMID: 34325022; PMCID: PMC9189702.
- Institute of Medicine (US) Committee on Multiple Sclerosis: Current Status and Strategies for the Future. In: Joy JE, Johnston RB Jr, editors. *Multiple Sclerosis: Current Status and Strategies for the Future*. Washington (DC): National Academies Press (US); 2001. Appendix D, Kurtzke's Expanded Disability Status Scale (EDSS) Available from: <https://www.ncbi.nlm.nih.gov/books/NBK222389/>
- Ministerio de sanidad. Información científica técnica versión 17 April 2020. Available from: <https://www.aemps.gob.es/>.
- Calvo C. Real Decreto 463/2020, de 14 de marzo, por el que se declara el estado de alarma para la gestión de la situación de crisis sanitaria ocasionada por el COVID-19. *Boletín Oficial del Estado [Internet]*. 2020, 25390–400. Available from: <https://www.boe.es/buscar/doc.php?id=BOE-A-2020-3692>
- Johnen A, Landmeyer NC, Bürkner PC, Wiendl H, Meuth SG, Holling H. Distinct cognitive impairments in different disease courses of multiple sclerosis—a systematic review and meta-analysis. *Neurosci Biobehav Rev*. 2017;83:568–78, <http://dx.doi.org/10.1016/j.neubiorev.2017.09.005>. Epub 2017 Sep 8. PMID: 28890199.
- Esclerosis Múltiple España. Guía Jurídica para la Defensa de los Derechos de las PCEM [Internet] [accessed 16 Aug 2024]. Available from: <https://esclerosismultiple.com/publicacion/guia-juridica-para-la-defensa-de-los-derechos-de-las-personas-con-em/>.
- De Oliveira MPB, de Castro AEF, Miri AL, Lima CR, Truax BD, Probst VS, et al. The impact of the COVID-19 pandemic on neuropsychiatric and sleep disorders, and quality of life in individuals with neurodegenerative and demyelinating diseases: a systematic review and meta-analysis of observational studies. *BMC Neurol*. 2023;23:150, <http://dx.doi.org/10.1186/s12883-023-03176-9>. PMID: 37046209; PMCID: PMC10091330.
- Ministerio de sanidad. Documento técnico Manejo en atención primaria del COVID-19 [Internet]. 2020 [accessed 4 May 2020]. Available from: https://www.mscbs.gob.es/en/profesionales/saludPublica/ccayes/alertasActual/nCov-China/documentos/Manejo_primaria.pdf.
- Asociación Balear de Esclerosis Múltiple. Servicios. [Internet] [accessed 16 Aug 2024]. Available from: <https://www.abdem.es/servicios/>.
- Camargo L, Herrera-Pino J, Shelach S, Soto-Añari M, Porto MF, Alonso M, et al. Escala de ansiedad generalizada GAD-7 en profesionales médicos colombianos durante pandemia de COVID-19: validez de constructo y confiabilidad [GAD-7 Generalised Anxiety Disorder scale in Colombian medical professionals during the COVID-19 pandemic: construct validity and reliability]. *Rev Colomb Psiquiatr (Engl Ed)*. 2021, <http://dx.doi.org/10.1016/j.rcp.2021.06.003>.

14. Zabay-Neiro MC, Nieves-Collado M, Carrés-Gonzalez G, Curto-Estupiñà G, Gargallo-Noval M, Martínez-Lerín N, et al. [Evaluation of the impact of lockdown on the health and lifestyle of users of the Fundacio Esclerosi Multiple's neurorehabilitation centres in Lleida and Reus]. *Rev Neurol*. 2021;73:249–57, <http://dx.doi.org/10.33588/rn.7307.2020640>. PMID: 34569035.
15. Torres-Costoso A, Martínez-Vizcaino V, Reina-Gutiérrez S, Álvarez-Bueno C, Guzmán-Pavón MJ, Pozuelo-Carrascosa DP, et al. Effect of exercise on fatigue in multiple sclerosis: a network meta-analysis comparing different types of exercise. *Arch Phys Med Rehabil*. 2022;103:970–87.e18, <http://dx.doi.org/10.1016/j.apmr.2021.08.008>. Epub 2021 Sep 10. PMID: 34509464.
16. Luque-Pérez R, Garríguez-Pérez D, Collado-Gosálvez A, Gómez-Muñoz E, Sánchez-del-Saz J, Miguel-Miguel C, et al. Impacto del confinamiento por la pandemia COVID-19 en el dolor musculoesquelético y la calidad de vida. *Acta Ortop Mex*. 2022;36:85–91, <http://dx.doi.org/10.35366/108122>.
17. Demaneuf T, Aitken Z, Karahalios A, Leong TI, De Livera AM, Jelinek GA, et al. Effectiveness of exercise interventions for pain reduction in people with multiple sclerosis: a systematic review and meta-analysis of randomized controlled trials. *Arch Phys Med Rehabil*. 2019;100:128–39, <http://dx.doi.org/10.1016/j.apmr.2018.08.178>. Epub 2018 Sep 19. PMID: 30240593.
18. Giménez-Llort L, Martín-González JJ, Maurel S. Secondary impacts of COVID-19 pandemic in fatigue, self-compassion, physical and mental health of people with multiple sclerosis and caregivers: the Teruel study. *Brain Sci*. 2021;11:1233, <http://dx.doi.org/10.3390/brainsci11091233>. PMID: 34573254; PMID: PMC8467200.
19. Buitrago Ramírez F, Ciurana Misol R, Fernández Alonso MDC, Tizón García JL, Grupo de Salud Mental del PAPPs. Salud mental en epidemias: una perspectiva desde la Atención Primaria de Salud española [Mental health in epidemics: A perspective from the Spanish Primary Health Care]. *Aten Primaria*. 2020;52 Suppl 2:93–113, <http://dx.doi.org/10.1016/j.aprim.2020.09.004>.
20. Ripoll J, Chela-Alvarez X, Briones-Vozmediano E, Fiol de-Roque MA, Zamanillo-Campos R, Ricci-Cabello I, et al. Impact of COVID-19 on mental health of health care workers in Spain: a mix-methods study. *BMC Public Health*. 2024;24:463, <http://dx.doi.org/10.1186/s12889-024-17979-z>. Erratum in: *BMC Public Health*. 2024 Mar 21;24(1):880. doi: 10.1186/s12889-024-18312-4. PMID: 38355471; PMID: PMC10865523.
21. Zhang GX, Sanabria C, Martínez D, Zhang WT, Gao SS, Alemán A, et al. Social and professional consequences of COVID-19 lockdown in patients with multiple sclerosis from two very different populations. *Neurologia (Engl Ed)*. 2021;36:16–23, <http://dx.doi.org/10.1016/j.nrl.2020.08.002>.
22. MS International Federation. Our strategy - 2023-2027 strategy for the global MSIF movement. [Internet] [accessed 17 Aug 2024]. Available from: <https://www.msif.org/about-us/our-strategy/>.
23. Lleixa Sardaños M, Artola Ortiz M, Becerril Ríos N, Cordero Martín G, Hernando Andrés A, Lozano Ladero AM, et al. Nursing care of patients with multiple sclerosis during the COVID-19 pandemic. *Rev Cient Soc Esp Enferm Neurol (Eng Ed)*. 2022, <http://dx.doi.org/10.1016/j.sedene.2022.06.001>. Epub ahead of print. PMID: PMC9212886.
24. Peláez Bejarano A, Villar Santos P, Robustillo-Cortés MLA, Sánchez Gómez E, Santos Rubio MD. Implementation of a novel home delivery service during pandemic. *Eur J Hosp Pharm*. 2021;28:e120–3. Epub 2020 Oct 28. PMID: 33115800; PMID: PMC8640397.
25. Coll Benejam T, Palacio Lapuente J, Añel Rodríguez R, Gens Barbera M, Jurado Balbuena JJ, Perelló Bratescu A. Organización de la Atención Primaria en tiempos de pandemia [Primary care organization in pandemic times]. *Atención Primaria*. 2021;53 Suppl 1:102209, <http://dx.doi.org/10.1016/j.aprim.2021.102209>. Epub 2021 Nov 19. PMID: 34802799; PMID: PMC8603466.
26. Ruiz-Maresca AJ, Sánchez Sánchez AB, Jiménez Jiménez L, Ariza Mateos MJ, Navarro Pérez I, García Saez-de-Guinoa M, et al. Valoración del Impacto sobre la Salud Percibida en Personas Usuarías de la Asociación Granadina de Esclerosis Múltiple Diagnosticadas por la Enfermedad Tras 30 Días de Confinamiento por Pandemia Sanitaria Covid-19. Asociación Granadina de Esclerosis Múltiple [Internet]. [accessed 10 Dec 2021] Available from: <https://aedem.org>.
27. Henson GJ, van der Mei I, Taylor BV, Blacklow P, Clafin SB, Palmer AJ, et al. The quality of life impact of the COVID-19 pandemic and lockdowns for people living with multiple sclerosis (MS): evidence from the Australian MS Longitudinal Study. *Qual Life Res*. 2024;33:1675–89, <http://dx.doi.org/10.1007/s11136-024-03620-4>.
28. Sastre Perea MJ, Vidal Thomàs MC, Cáceres Teijeiro Y, Moreno Sancho ML, Miguelez Chamorro A, Font Oliver MA, et al. Programa Pacient Actiu de les Illes Balears. Palma: Servei de Salut de les Illes Balears; 2018.
29. Duro Robles R, Prieto Valle JM. Pla d'Humanització en l'Àmbit de la Salut 2022-2027. Palma: Servei de Salut de les Illes Balears; 2022.