Effects of two years of COVID-19 pandemic on individuals with fibromyalgia

T. Sahar[1], A. Minerbi[2], M.G. Pagé[1,3], S. Toupin[1], M. Verner[1], S. Mitrovic[1],
S. Yoram[1], M.-A. Fitzcharles[1]

[1]The Alan Edwards Pain Management Unit (AEPMU), Montréal General Hospital, Montreal, Quebec, Canada; [2]Institute for Pain Medicine, Rambam Health Campus, and Rappaport Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel; [3]Department of Anaesthesiology and Pain Medicine, Faculty of Medicine, Université de Montréal, Quebec, Canada.

Abstract

Objective

The COVID-19 pandemic has caused prolonged stress, potentially exacerbating fibromyalgia (FM) symptoms. This study aimed to compare the health status of FM patients and healthy controls (HC) before and 2.5 years into the pandemic.

Methods

A cohort of FM patients and HC with pre-pandemic data completed an online survey in August 2022. The survey collected demographic information, symptom severity, and health perception using the Fibromyalgia Impact Questionnaire (FIQ), Brief Pain Inventory (BPI), Perceived Stress Scale (PSS), and other quality of life and physical activity questionnaires.

Results

The study included 32 FM patients and 21 HC, all female and predominantly white, with FM patients having higher BMI. Emotional responses to the pandemic were similar across both groups. Clinical measures in FM showed stability or improvement in 84% for FM severity scores, 66% for FIQ (quality of life), and 50% for pain intensity. Physical activity related to sports decreased in both FM and HC, while leisure activity increased in FM but decreased in HC. In FM insomnia correlated with pain intensity, clinical measures were associated with function and affective status, and changes in leisure activity inversely correlated with pain interference.

Conclusion

Contrary to expectations, FM patients' health remained stable or improved during the pandemic. This study is unique due to its pre-pandemic data and comparison to a control group, reducing potential bias. Findings suggest that FM patients may have developed resilience, or benefited from pandemic-related lifestyle changes, such as a slower pace of life. Alternatively, the observed trends could reflect a regression to the mean.

Key words

fibromyalgia, chronic pain, COVID-19, pandemic, psychosocial factors

Tali Sahar, MD, MSc
Amir Minerbi, MD, PhD
M. Gabrielle Pagé, PhD
Sylvie Toupin
Maria Verner, MSc
Sabrina Mitrovic, MSc
Shir Yoram, MD
Mary-Ann Fitzcharles, MD

Please address correspondence to:
Tali Sahar,
Alan Edwards Pain Management Unit,
McGill University Health Centre,
Montreal General Hospital,
Room A5-157, 1650 Avenue Cedar,
Montréal, Québec H3G 1A4, Canada.
E-mail: tali.sahar@mail.mcgill.ca

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Introduction

The COVID-19 pandemic has affected people worldwide in multiple ways. Some were infected with the virus with varying severity of illness, others were affected by illness within families, and many experienced the stressors associated with quarantine restrictions, lockdowns, and the consequences of social distancing (1). Patients with chronic illnesses likely experienced stressors similar to the general population, but with the added burden of changes in healthcare delivery which could compromise optimal healthcare.

Fibromyalgia syndrome (FM) is one such chronic illness characterised by chronic widespread pain, sleep disturbance, fatigue, and other symptoms, affecting predominantly women and with a worldwide prevalence of about 2-8% (2). Symptoms tend to fluctuate over time, with exacerbation associated with various factors, especially stress (3). The multiple stressors that were present for over two years during the pandemic could have adversely affected the health status of those with FM.

In the early days of the pandemic, concerns were raised about the adverse consequences for patients with chronic noncancer pain (4, 5). In a Pan-Canadian study of over 3000 individuals with chronic pain, two-thirds reported worsened pain and almost half reported moderate/severe levels of psychological distress in the first four months of the pandemic (6). In contrast, there have also been reports of stable pain status (7, 8). Within two weeks of initiation of regulations in Germany, pain intensity for 43 patients with peripheral neuropathy remained stable or improved for most, but those reporting changes in their social life were more likely to report higher pain ratings (8).

Specific to FM, studies in the early phase of the pandemic have reported variable impact on symptoms and overall health status going from negative effects (9, 10) to no impact or even improvement of symptoms; Cavalli *et al*. (11) observed that while the median Fibromyalgia Impact Questionnaire (FIQ) scores did not change before and one week after lockdown, 67% reported higher scores while 33% had lower scores. Similar heterogeneous effects were seen in a qualitative study, where although the main symptoms of FM were exacerbated, the ability to pace and adjust allowed for an improved quality of life (12). Changes in working conditions and reduced social demands enabled better ability to cope (12).

An important consequence of the lockdown measures associated with the pandemic was decreased access to physical activities. The therapeutic benefits of physical activity (PA) are widely accepted, (13) and exercise is strongly recommended in FM treatment guidelines (14, 15), based on abundant research (16, 17). Colas *et al*. reported that many FM patients were able to find alternative exercise activity when their usual activity pattern had been interrupted (18). Although subjective changes in physical activity during the COVID-19 are described, there is little information about physical activity as measured by a validated structured questionnaire.

There are limitations to studies of health status associated with the pandemic that must be acknowledged including the lack of pre-pandemic data (10, 19), lack of control group (20), or an unmatched control group (21), lack of geographical diversity with published studies mostly from Europe, and lack of data past the first wave of the pandemic (spring/summer 2020). Furthermore, the prolonged effect of the pandemic on health status of individuals with FM has been less studied. The objective of the present study was to assess symptomatology and physical activity profiles in a well characterized cohort of women with FM compared to healthy individuals, with pre pandemic data and a second timepoint at two and half years into the pandemic.

Methods

Ethical considerations and oversight

The study was conducted at the Alan Edwards Pain Management Unit of the McGill University Health Centre, Montreal, Quebec, Canada. The study was approved by the McGill Research Institute Review Board (#2023-8816). Participants were given a detailed explanation of the study and signed an electronic informed consent form.

Table I. Selected demographic and anthropometric characteristics of FM patients and healthy controls (mean ± SD) or % as indicated. Significant ($p<0.05$) p-values indicated in bold).

	FM (32)	HC (21)	adj p-value
Age (in 2022) (years±SD)	51.69 ± 7.27	47.19 ± 10.78	0.105
Education (% academic)	26 (81%)	16 (76%)	0.264
Marital status (%married)	19 (59%)	12 (57%)	1.000
Ethnicity (% white)	31 (97%)	20 (95%)	1.000
Working status (% full or part time)	20 (63%)	20 (95%)	**0.001**
Household members (% living alone)	9 (28%)	1 (5%)	**0.048**
Body Mass Index (BMI) (kg/m^2)	28.37 ± 6.58	27.04 ± 5.47	**0.001**

FM: fibromyalgia; HC: healthy controls.

Patient populations

Women over the age of 18 years, diagnosed with FM and healthy controls (HC) who had participated in the Fibromyalgia-Microbiome study, prior to the COVID-19 pandemic and given consent to be contacted for future research (22), were invited to complete an online survey on the REDCap (Research Electronic Data Capture) secured platform from August to September 2022.

Documentation included FM symptom burden, using the same questionnaires completed prior to the pandemic (during 2018), and additional information related to the effects of the COVID-19 pandemic. FM-related questionnaires included: 1) The Fibromyalgia Survey Diagnostic Criteria and Severity Scale (FSDC) questionnaire, assessing the Wide Spread Pain Index (WPI, total score 0-19) and Symptom Severity Score (SSS, total score 0-12) and a FM Severity Score (FSS, the sum of WPI and the SSS, total score 0-31) (23); 2) The Fibromyalgia Impact Questionnaire (FIQ) (24), a 10-item questionnaire evaluating physical functioning, work difficulty, pain, fatigue, morning tiredness, stiffness, anxiety, and depression; 3) The Physical Activity Self-Administered Questionnaire (AQAP) (25), the Canadian version of Baecke questionnaire with three domains and a global score: Habitual PA (0-5), Leisure PA (0-5), Sport PA (0-5), Global PA (0-15).; 4) The Insomnia Severity Index (ISI) (26), a seven-item screening tool for insomnia (total score is 0-28), with four categories: No insomnia (0-7), Subthreshold insomnia (8-14), moderate insomnia (15–21) and severe insomnia (22-28).

COVID-19 related questionnaires included: 1) The Chronic Pain & COVID-19 Pan-Canadian Study (CPCPCS) questionnaires (6), using validated questionnaires, as well as specific questions, aimed to explore areas concerning the effects of the global pandemic, including changes in physical activity level, changes in medication consumption, effects of Covid-19 restrictions and changes in social life, and additional questions regarding the lifting of COVID-19 restrictions; 2) The EuroQoL-5D (EQ-5D-5L) (27), a 6-item questionnaire evaluating patients' reported quality of life in five domains and a visual analogue scale (EQ-VAS) for global health rating (0-100); 3) The Brief Pain Inventory (BPI) – a 12-item questionnaire evaluating function level and disability among pain patients (28); 4) The Perceived Stress Scale-4 (PSS-4) (29), measures the extent to which individuals found their life unpredictable, uncontrollable and overloaded over the past month (total score 0-16); and 5) The Patient Health Questionnaire (PHQ-4) (30) - a 4 item screening tool with two subscales assessing levels of depression and anxiety.

Data analysis

Dichotomous variables were compared using Fisher's Exact test. Quantitative variables were evaluated for normality of distribution using the Wilk-Shapiro test. Normally distributed variables were compared using ANOVA while non-normally distributed variables were compared using the non-parametric Kruskal-Wallis test. Adjustment for multiple comparisons was performed using Benjamini-Hochberg correction. Correlation analysis was done using the non-parametric Kendall Tau test. Analyses were done on IBM SPSS v. 28 and MathWorks MATLAB v. 2021b.

Results

Demographic and anthropometric characteristics of individuals with FM and healthy controls

Of the original cohort (70 FM, 59 HC), 32 FM (45%) and 21 HC (35%) completed the 2022 survey. All were female, predominantly white, and with slightly higher BMI for the FM *vs.* HC group (28.37±6.58 *vs.* 27.04±5.47, $p=0.001$), more living alone (28% *vs.* 5% $p=0.048$) and less working (63% *vs.* 95%, $p=0.001$) (Table I). There were no significant differences in demographics and clinical measures between patients who participated in the 2022 survey *versus* those who did not.

Measured effects of COVID-19 pandemic on personal life

Compared to the pre-pandemic evaluation, most individuals with FM reported improved symptomatic burden in their post-pandemic evaluation, as measured by both FSDC (17.75±8.04 *vs.* 23.72±5.03, $p<0.001$) and FIQ 62.81±13.49 *vs.* 50.91±17.8). The FSDC score was lower post-pandemic for 84% (27/32) of the FM group and FIQ was lower for 66% (22/32) (Table II).

No significant differences were observed in levels of pain intensity, anxiety, depression, and fatigue scores, as evaluated by FIQ and ISI. PA levels changed for both the FM and HC groups. Global PA scores were slightly reduced for FM but significantly reduced for HC. Sport-related PA was significantly reduced for both, whereas leisure activity was increased for the FM group, but reduced for HC (Table II).

Significant differences in the changes of pre- to post-pandemic measures between FM and HC were observed for total FIQ score, anxiety and depression scores, and leisure and global PA scores.

Self-reported effects of COVID-19 pandemic on personal life

SARS-CoV-2 infection was reported by 34% of FM group *versus* 14% of the

Table II. Changes in clinical measures FM and HC participants in 2018 and in 2022.

	FM (32)				HC (21)				T test for difference in change FM-HC	
	before COVID-19	during COVID-19	change	adj *p*-value	before COVID-19	during COVID-19	change		Diff.in change	adj *p*-value
Pain VAS (0-10)	6.78±2.18	6.06±2.9	-0.72±3.19	0.455	0.52±1.08	0.95±1.91	0.43±1.83	0.693	-1.14	0.103
Fatigue FIQ^a (0-10)	7.66±2.13	7.22±2.66	-0.44±3.78	1.000	1.71±2.26	1.9±2.43	0.19±9.26	1.000	-0.63	0.477
Total FIQ score^a (0-100)	62.81±13.49	50.91±17.8	-11.91±21.78	**0.040**	7.63±9.26	25.04±11.93	17.41±6.6	**0.001**	-29.31	**<.001**
Insomnia Severity Index (ISI) (0-28)	17.66±4.32	15.16±6.98	-2.5±7.97	0.100	5.88±6.6	6.05±5.57	0.17±5.84	1.000	-2.67	0.167
Anxiety FIQ^a (0-10)	5.97±2.46	5.03±2.96	-0.94±3.84	0.310	0.95±1.66	1.86±3	0.9±1.97	0.084	-1.84	**0.026**
Depression FIQ^a (0-10)	5.09±2.63	3.88±3.08	-1.22±4.02	0.134	0.38±0.86	1.52±2.6	1.14±2.43	0.062	-2.36	**0.010**
AQAP^b Work / household (0-5)	2.7±0.36	2.78±0.59	0.08±0.55	1.000	2.99±0.44	2.66±0.68	-0.33±0.6	**0.037**	0.34	0.067
Weekly ^{b} Sport (Yes)	23 (72%)	9 (28%)	Stop 8.75% Con 5(15.63%) Start 4(12.5%) Never 7(21.9%)	**<.001**	16 (76%)	8(38%)	Stop 38.1% Con 38.1% Start 0% Nev. 23.8%	**0.013**	19.35%	0.122
AQAP Sport^b (hrs/week)	0.7±0.88	0.57±01.27	-0.13±1.7	0.669	1.55±2.2	0.95±01.39	-0.59±1.91	0.174	0.44	0.376
AQAP Leisure^b (0-5)	2.40±0.45	2.70±0.54	0.35±0.65	**0.005**	3.24±0.6	2.78±0.58	-0.46±0.65	**0.004**	0.81	**<.001**
AQAP^b Global physical activity	6.59±1.94	6.32±1.99	-0.27±3.01	0.669	8.57±2.4	6.96±2.4	-1.6±2.43	**0.007**	-1.33	**0.041**
FS score (0-31)	23.72±5.03	17.75±8.04	-5.97±7.06	**<.001**	3.67±3.56	4.71±5.36	1.05±5.24	0.377	-7.06	**<.001**

Changes in clinical measures based on questionnaires filled in by FM and HC participants in 2018 and in 2022: measures are separately presented for FM and HC in pre-pandemic and post-pandemic time points. Finally, differences between pre- and post-pandemic measures of FM and HC are presented (mean±SD). Score ranges are shown under each variable. Significant ($p<0.05$) two-sided *p* values are indicated in bold.

^{a}higher scores reflect more severe symptoms; ^{b}higher scores indicate better status. FM: fibromyalgia; HC: healthy controls; VAS: Visual Analogue Scale; FIQ: Fibromyalgia Impact Questionnaire; ISI: insomnia severity index; AQAP: the physical activity self-administered questionnaire; SD: standard deviation.

HC. There was a change in work status for about half of each group, with 4 FM patients stopping work compared to one HC (Table III). Half (16/32) of the FM patients reported changes in symptom management strategies, including modification of non-pharmacologic and pharmacologic treatments. Twelve adopted new self-management practices including healthier nutrition, increased PA, self-relaxation techniques, on-line classes (yoga etc.), or adoption of a pet. Both groups expressed neutral emotions related to the pandemic, except for slightly higher perceived anxiety for the FM group (3.8±3.1 *vs.* 2.9±2.5, p=0.018). There were no significant differences in the proportions of those screened positive for anxiety or depression on PHQ-4 questionnaires (Table III). While the FM group had higher perceived stress (PSS-4) (7.41±3.0 *vs.* 4.81±2.4, p=0.0012), both groups reported similar pandemic-related stress. However, the FM group expressed more concerns about lifting COVID-19 related restrictions (Table IV).

Correlations between the changes in questionnaire scores during the COVID-19 pandemic and demographic and clinical measures

The differences in clinical measures of the FM group before and after the pandemic did not correlate with demographic variables, or subjective or measured change in pain, but did correlate with measures of function and affective status (PSS-4, PHQ depression, PHQ anxiety and total FIQ scores) (Fig. 1). Change in leisure PA was inversely correlated with the pain interference score.

Discussion

In this study the prolonged effects of the COVID-19 pandemic on the symptom burden of women with FM and HC were examined. Using a highly characterised pre-pandemic cohort, we have observed that the FM severity score, FM related quality of life and pain intensity either remained stable or improved for most FM patients. Although half of the FM group had a perception of increased pain, only 18.9% reported increased pain intensity in the post-pandemic evaluation. While sport-related physical activity was reduced for both groups, leisure PA was significantly increased for the FM group but decreased for the HC group.

How does our study compare to others: studies of early phases of the pandemic (March-October 2020) with and without pre-pandemic data

Our findings are in accordance with most early-phase pandemic surveys that included pre-pandemic data. Researchers from Europe, USA and Australia (11, 12, 20, 31-33) found no change in most clinical measures before and during the acute stage of the pandemic. In a follow-up survey of 50 FM patients in Australia, there were no significant differences in most clinical measures of FM, but with improved fatigue (31). Similarly, Koppert *et al.* reported that most clinical measures did not change for three independent samples of Dutch women with FM surveyed before the

Table III. Self-reported effects of the COVID-19 pandemic on personal life, health status and changes to regular medical treatment (mean±SD).

			FM (n=32)		HC (n=21)	adj *p*-value
Diagnosed with COVID-19 (%)			11 (34%)		3 (14.2%)	0.165
COVID-19 complications (%)			3 (9.4%)		None 0%	1.000
Changed work status during pandemic (%)			18 (56.2%)		9 (42.9%)	0.055
Stopped working during pandemic (%)			4 (12.5%)		1 (4.7%)	0.849
Perceived change in pain	Pain worsened	Considerably worsened Somewhat worsened	17 (53%)	6 (18.9%) 11 (34.3%)	1 (4.7%)	
	pain unchanged		10 (31%)		20 (95.3%)	
	pain improved		5 (16%)		0%	
Emotions related to the pandemic (CPCPS) 0-10 scale)						
Sadness			4 ± 2.7		2.9 ± 2.5	1.000
Worried			4.9 ± 3		4.1 ± 3.2	0.094
Solitude			3.6 ± 3		2 ± 3	0.213
Anger			4 ± 2.7		2.9 ± 2.5	0.066
Powerlessness			3.6 ± 3		2 ± 3	0.910
Anxiety			3.8 ± 3.1		2.5 ± 2.9	**0.018**
Surprise			5 ± 3.5		3.1 ± 3.1	1.000
Relief			4.2 ± 3.2		3.3 ± 3.1	0.574
Hope			1.9 ± 2.2		0.6 ± 1.1	0.254
Quality of Life Dimensions (EQ-5D-5L)						
QoL mobility			2.12 ± 1.2		1.19 ± 0.4	**0.001**
QoL self-care			1.34 ± 0.6		1.00 ± 0.0	**0.008**
QoL usual activities			2.28 ± 1.0		1.10 ± 0.3	**<0.001**
QoL pain discomfort			3.00 ± 0.9		1.38 ± 0.7	**<0.001**
QoL anxiety and depression			2.38 ± 1.0		1.62 ± 1.1	**0.0015**
EQ-VAS (0-100)			62.94 ± 19.6		81.10 ± 17.6	**<0.001**
Perceived Stress Score (PSS-4 Total)			7.41 ± 3.0		4.81 ± 2.4	**0.001**
Screened positive in PHQ-4 anxiety			7 (21%)		3 (14%)	0.477
Screened positive in PHQ-4 depression			7 (21%)		3 (14%)	0.477
BPI Pain intensity Score			5.06 ± 1.99		1.59 ± 1.13	**<0.001**
BPI Pain Interference Score			5.04 ± 2.64		0.82 ± 1.62	**<0.001**

Significant (p<0.05) two-sided p-values are indicated in bold.
FM: fibromyalgia; HC: healthy controls; QoL: quality of life; EQ-5D-5L: EuroQol 5 dimensions 5 Levels (EQ-5D) instrument (REF: EUROQoL); PHQ-6: anxiety and Depression screening tool (REF); PSS-4: perceived stress score (REF:PSS); BPI: Brief Pain Inventory.

COVID-19 pandemic in 2018 (n=142), during the acute outbreak (n=304) and during prolonged lockdown in 2021 (n=95). Pain levels were lower (p<0.001) and there was better role physical functioning (p<0.001) (34). In an Italian study of 37 FM participants, sleep deteriorated for 81%, but without differences in FIQ or sleep quality measured by the Pittsburgh Sleep Quality Index before and after lockdown (20). Our results differ from studies that reported negative effects of the pandemic on individuals with FM, but did not include documented pre-pandemic data (9, 10, 35). Information based on participants' recall is subject to recall bias, which increases at times of stress and allows the validity of conclusions to be questioned (36).

How does our study compare to others: studies of late phases of the pandemic (March-July 2022) with pre-pandemic data

Only few studies have surveyed individuals with FM during late phases of the pandemic (March-July 2022). A longitudinal study of 390 FM patients and 151 controls in the United Kingdom (37) reported stable symptoms

Table IV. Self-reported effects of COVID-19 pandemic (mean ± SD).

	FM (32)	HC (21)	adj *p*-value
I agree with the protective measures that have been put in place up to now.[a]	4.72± 1.4	4.33 ± 1.5	0.339
My usual social activities have considerably decreased since they implemented the restrictions associated with the COVID-19 pandemic[a]	4.84± 1.0	4.62 ± 1.3	0.475
I am able to maintain a relatively active social life by using technology (phone, chat, internet exchanges, videos)[a]	4.31± 1.0	4.48 ± 1.2	0.581
The restrictions associated with the COVID-19 pandemic have increased my dependence on others, including family members (*e.g.*, moral support, certain tasks such as running errands)[a]	2.62± 1.7	2.19 ± 1.3	0.319
I feel unsafe with the recent lifting of COVID-19 restrictions (since 12-May-22) (*e.g.* masks are not mandatory, no social distancing)[a]	3.50± 1.6	2.52 ± 1.3	**0.026**
I worry that the lifting of COVID-19 restrictions (since 12-May-22) will worsen my fibromyalgia symptom [a]	2.56± 1.5	1.67 ± 0.9	**0.019**
I believe that lifting of COVID-19 restrictions (since 12-May-22) will allow me to take better care of myself[a]	3.75± 1.2	4.48 ± 1.4	0.053
On a scale from 0 (not at all) to 10 (extremely), to what extent do you find the COVID-19 pandemic stressful?[b]	5.75± 2.8	5.48 ± 2.9	0.732
On a scale from 0 (not at all) to 10 (extremely), To what extent do you find the restrictions associated with COVID-19 pandemic stressful?[b]	5.12± 2.3	5.29 ± 3.1	0.831
I worry about my health during the pandemic and this causes me stress (0-10) [b]	5.38± 3.3	3.71 ± 3.2	0.078
Fear of lacking financial resources causes me stress. (0-10) [b]	4.66± 3.8	4.76 ± 3.4	0.918

Significant ($p<0.05$) two-sided *p*-values are indicated in bold.
FM: fibromyalgia; HC: healthy controls. [a]restriction related stress; [b]pandemic related stress.

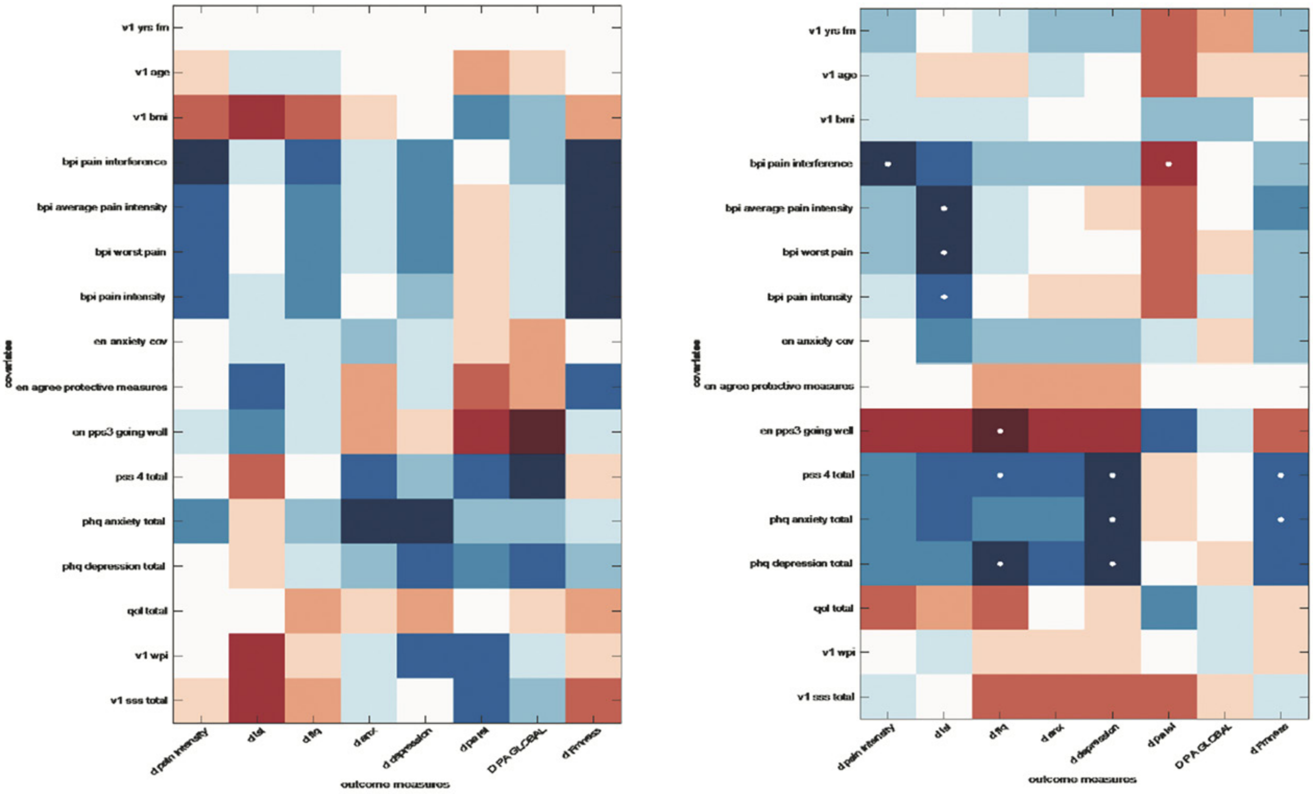

Fig. 1. Correlation analysis between measured clinical changes and covariates.

with an increase in wellbeing for FM patients and worsening of symptoms for the HC during lockdown. Mosch *et al.* (38) reported stable pain severity for 109 FM patients surveyed in the early months of the pandemic and again in 2022. Similar observations have been reported for a subgroup analysis of patients with chronic non cancer pain (39). Although measured pain severity did not change in both studies, patients reported self-perceived increase in pain related to the pandemic in both studies. FM patients from our cohort had slightly better appreciation of their change in pain; this may be related to the fact that our cohort included healthier and younger women, while Mosch *et al.* included particularly vulnerable patients (69% of the cohort had significant comorbidities).

Comparison to studies of the impact of the COVID-19 pandemic on physical activity

It is generally accepted that the pandemic resulted in global decreased PA and increased sedentary behaviour. However, many studies are open to recall bias due to lack of pre pandemic data (40). Studies evaluating pre-pandemic PA data reveal a more complex picture; for instance, overall increase in PA (+3.28 percentage points, 95% CI: 2.48 to 4.09) was observed in an analysis of the USA Behavioral Risk Factor Surveillance System data (n=2,146,384) (41) with the largest improvements in subgroups that share features with our FM group (ages of 45 and 54 years, unemployed, and White respondents). FM patients that were exposed to a pre pandemic physical activity program were more likely to remain physically active during the pandemic (68% *vs*. 28%) (18). While similar increases had been noted in other surveys, leisure PA was not specifically assessed in FM patients.

Canadian guidelines encourage individuals with FM to use pacing and/or graded incremental activity to maintain or improve function (15). The pace of life during the pandemic slowed for many, leading some authors to hypothesise a favourable effect on health status in FM (21, 34). We present similar observations, some FM participants adopted self-care methods and healthier lifestyle during the pandemic; leisure PA was increased and correlated with a decrease in pain interference. A qualitative study supports these findings (12, 18).

Strengths and limitations

Our study uniquely includes pre-pandemic data, and a HC group, which is a strength compared to most pandemic literature where no pre-pandemic data are available. The 2022 survey was performed shortly after the Quebec government lifted most of the COVID-19 restrictions during the summer of 2022. Lifting of the restrictions may have contributed to the considerably low COVID-19-related anxiety scores in both groups. Strengths include the highly characterized group of both FM and HC prior to the pandemic, quantification of physical activity, personal perceptions related to COVID-19 pandemic and a control group, that enabled comparisons of the effects on the pandemic on healthy individuals. For the HC group, health-related quality of life (measured by the Eq-5D-5L) was comparable to that of Quebec women, with the FM group scoring similar to women living with chronic pain in Quebec (42).

Limitations of the current study include the small cohort size and attrition rate, single study site, absence of male participants, lack of diversity in terms of education and ethnicity, and lack of information on health status during the early stages of the pandemic. As individuals with FM scored in all symptom-related measures significantly higher than HC in 2018, changes during COVID pandemic may represent regression to the mean.

Conclusions and future directions

Despite early predications, pain intensity and other clinical measures for most participants with FM did not worsen two and a half years into the global pandemic. In fact, FM-related quality of life remained stable or even improved, while that of HC slightly declined. These observations may have several putative explanations, including a resilience of some women with FM to prolonged stress compared to acute stressors, improved self-care and augmentation of active coping mechanisms, and societal factors leading to an overall slowing of pace.

Further research, preferably longitudinal studies, qualitative research, and engaging individuals with FM in the development of research questions (43), could help leverage their experiences during the pandemic to improve and personalise care.

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