

Consequences of the COVID-19 Quarantine on the Quality of Life of Individuals with Chronic Pain

¹Dr. Uma Swadimath C, ²Ms. Happy Baglari, ³Dr. Deepankar Shivam

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¹Professor, Department of General Management, JAIN (Deemed to-be University), Bangalore, India, Email Id-dr.uma_swadimath@cms.ac.in

²Assistance Professor, Department of Clinical Psychology, Assam down town University, Guwahati, Assam, India, Email id- baglari.happy@adtu.in

³Assistant Professor, Department of Medicine, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India, Email id- deepankarshivam@gmail.com

Abstract

Introduction: During the COVID-19 epidemic, lockdown constraints were enforced by nations all around the globe. A lockdown has been proposed as a solution situation, comprising physical and social isolation measures, for individuals who have an excessive amount of chronic pain and need quick adaption to care and treatment plans.

Method: We examined the lockdown restrictions in the UK affected people with chronic pain (N=431) in comparison to a healthy control group (N=88) with a wired technique. Data were gathered from 2020 from mid-April through early May, which was the UK's strictest lockdown period. We hypothesized that increases in pain and psychological discomfort associated with lockdowns degrees of pain would act as a mediator catastrophizing, in line with the fear-avoidance paradigm.

Results: In comparison to their estimates of the average pain levels before confinement, responses showed that those with chronic pain felt higher pain intensity ($p<001$). Additionally, they were more negatively impacted by lockdown situations than those who weren't in pain, showing higher levels of self-perceived anxiety and depression, improved isolation, and decreased physical activity levels ($p<001$). According to the categorized model analysis, pain catastrophizing was a significant contributor to the degree of self-reported raises in pain intensity through isolation ($\beta =.28$, $p<001$) and also acted as a mediator between pain and depressed mood. Increased pain sensations were similarly correlated with perceived declines in physical activity levels ($\beta=.15$, $p<001$). Interestingly, a subsection (N=85) does not appear to have an important difference in pain greatness levels. Nevertheless, people in this subgroup continued to report higher levels of self-perceived pain through lockdown, which was also expected, given typical pain levels catastrophizing.

Conclusion: Results show that patients with chronic pain have negative lockout consequences, including self-perceived pain increases. The use of remote pain treatment aims to decrease pain catastrophizing and improve health. For this sensitive demographic, actions like physical exercise may be useful.

Keywords: Quality of life, chronic pain, covid-19, depression, anxiety, individuals.

1. Introduction

Our lives have been completely altered by the coronavirus outbreak that began in Wuhan, China, in late 2019 and spread around the globe. Due to COVID-19, there have been a lot of deaths worldwide. Governments have enacted several limitations as a result in order to prevent the epidemic from spreading. One of them included quarantine procedures, which apply to both diseased and uninfected people (Koc et al., 2022). The COVID-19 pandemic has had a number of effects on people's quality of life. These involve the indirect effects of precautions like quarantine, social exclusion, and activity limits, as well as the immediate health impacts of the disease, such as sickness or fatalities (Kim et al., 2022). Quality of life (QoL) has mostly been investigated in research concentrating on noncommunicable and chronic illnesses during the last ten years. It is described as a patient's overall personal opinion of the impact of sickness or health issue on different areas including mental,

social, physical, and vocational functioning. Assessing QoL in a variety of areas enables the identification of a wide range of issues that may have an impact on people's daily life (Algahtani et al., 2021).

More than 30% of individuals globally suffer from chronic pain, which has serious negative effects on social welfare and the economy. The top 10 main causes of years missed to incapacity involved chronic pain. In addition to being risk factors for developing chronic pain, anxiety, sadness, and sleeplessness all have a strong correlation with worsening pain symptoms (Sun et al., 2022). A growing body of research demonstrates that emotional suffering contributes to chronic persistent pain and plays an important part in central pain-regulating processes (Elaraby et al., 2022). A person's QOL may be characterized as "the degree of desire and satisfaction across the physical, psychological, social, activities, substances, and architectural area" of their existence. The level of happiness with one's physical, psychological, and social elements as well as the variety of issues one may experience throughout these categories, are all reflected in one's QOL (Hrytsenko et al., 2023). Acute healthcare hospitals are the primary locations where patients with serious chronic diseases resulting from non-COVID-19 ailments get medical attention. They need urgent healthcare systems increasingly when their health worsens (Asai et al., 2022). There is a correlation between the greatest risk for COVID-19 and the increased incidence of chronic pain among seniors and those who also suffer from comorbid illnesses or disabilities. An empirical investigation is crucial for capturing how sufferers of chronic pain are impacted by the present global epidemic and supporting attempts to establish pain organization methods in these difficult situations. For instance, technological tools used that enhance levels of interaction combat isolation in society (Kaseweter et al., 2022). If we can have a better understanding of how high-stress conditions make chronic pain worse, we will be able to modify treatment techniques in order to reduce the suffering that is associated with it (French and Mattacol, 2023). A psychological condition that has a significant bearing on the suffering from pain, physical limitations, and total QoL, is thought to have a role as a link between high-stress events and an increase in the magnitude of the pain they cause (Azhar et al., 2023). In this research, we investigate the effects of the COVID-19 quarantine on the overall quality of life (QoL) of those who have chronic pain. Factors such as staying at living at home with chronic diseases are related to a higher risk of unfavorable impacts.

The reminder section consists of the following: The relevant works are discussed in section 2, the suggested approach is presented in section 3, the results and discussion are discussed in section 4, and section 5 discusses the conclusion of the study.

2. Literature Review

Cohen et al., 2021 used the non-probability convenient sampling technique. The research eliminated those participants who had memory issues even prior to COVID-19. The WHOQOL-BREF quality of life scale and the mental health scale were used to gauge the variables involved in the research. Benoliel et al., 2019 affected chronic pain in more than 30% of individuals globally, placing a significant emotional and financial strain on them. Contrary to acute pain, which has a survival benefit, chronic pain may be better seen as a sickness with associated psychological effects and a need for medical intervention. Yong et al., 2022 discussed the revised persistent secondary headache and orofacial pain (OFP) diseases. The International Classification of Headache Disorders (ICHD-3) of the World Neurology community is used in the ICD-11 chapter on Neurology.

Bonanni et al., 2022 employed the National Health Interview Survey, a household-based yearly survey of U.S. adults who reported health conditions that can be utilized to provide nation-level estimates to ascertain the incidence of chronic pain and its effects among people in the country. We discovered that 50.2 million persons reported experiencing pain on a majority of days or daily using a chronic pain module included in the 2019 National Health Interview Survey. The mutually beneficial relationship between immune system cells and the nerve cells that influence vision in this circumstance may be crucial to understanding these processes. As a result, they offered a fresh overview of the incidence and financial burden of the musculoskeletal pain issue as well as a list of the key molecular actors involved with the initiation and maintenance of pain (Tsur, 2022). Horler et al., 2022 comprised that looked at young adult female samples and females who had undergone child abuse to see if child trauma was connected to aggressive, chronic pain characterization. Child abuse, posttraumatic stress disorder (PTS) symptoms, complicated posttraumatic symptoms (disturbances of self-

organization (DSO)), and abusive chronic pain personification were all assessed through measurements of self-report in both trials.

Constructivist grounded theory was the methodological basis for this qualitative investigation. Through social media, a purposeful sample of five musculoskeletal physiotherapists from the UK was gathered. The semi-structured voice recording interviews, field notes, and memoranda were used to gather the data, which was then categorized and examined via a constant comparative approach (Pate et al., 2023). Agnus Tom et al., 2022 was to describe the idea of pain among care-seeking kids and their guardians, explore its clinical and demographic correlations, and found conceptual shortcomings in the existing research. McCracken et al., 2022 discovered the methods for improving the quality of life of people who have chronic low back pain (CLBP), as well as to synthesize the research that already exists on the elements that influence QOL in people who have chronic low back pain (CLBP). Chronic low back pain (CLBP) is a common medical illness that may impact a person at some point in their lifetime, which may result in a worse quality of life (QOL). This condition is known as a burden on society. Towey-Swift et al., 2022 investigated the proof for using acceptance and commitment therapy (ACT), an important example of this new wave or the newest current generation of therapeutic techniques, in the treatment of individuals who suffer from chronic pain.

3. Methodology

In this section, we discuss the impact of the COVID-19 isolation period on the quality of life of those who suffer from chronic pain. The term quality of life describes the general contentment and well-being a person feels in every aspect of their existence. When thinking about people with chronic pain, the everyday constant discomfort they experience has a tremendous impact on their quality of life. A person's total quality of life may be greatly impacted by chronic pain on many different levels, including physical, psychological, social, and emotional health.

3.1 Objectives and working hypotheses

The purpose of this research was to investigate the impact of the global epidemic of COVID-19 and the related lockdown conditions in the United Kingdom on the extent of degrees of discomfort, psychological health, and exercise of a team of volunteers struggling with chronic pain in comparison to a unit of subjects who did not experience pain. It was hypothesized that circumstances of lockdown would end in elevated levels of pain intensity in comparison to the time period before lockdown in participants who live with chronic pain. Second, we hypothesized that those who experience chronic pain would be more susceptible to the negative effects of lockdown circumstances, both psychologically and physically, in comparison to respondents who did not experience pain. Third, we tested the hypothesis that alterations in self-perceived levels of reported pain may be associated with variations in rates of pain catastrophizing, as well as variations in physical exercise and psychological health, in line with theoretic frameworks of panic rejection.

3.2 Conception and working method

An online study with participants (N=519) included self-reported information about chronic pain individuals (N= 431) and a comparative test of control contributors (N=88) who did not experience pain. Online ads were used to find the bulk of the participants. In addition, a subset (N=85) of patients with chronic pain was progressively selected from a database of patients who already consented to be approached by the researchers for follow-up studies. This particular group had already supplied similar initial information on psychological and pain measurements prior to the lockout. The research pages, which were created using the Qualtrics software, were provided to the corresponding participants. Participants completed a tick-box permission form after reading the details page and providing their informed consent.

Before completing self-report variations shows and indicates the extent of modifications to their agony, exercise, and connection between happiness and pre-COVID levels, contributors finished demographic questionnaires and a self-reported series of Visual Analogue Scales (VAS), which captivated their present degrees of discomfort and happiness. Finally, contributors responded to several questions concerning their individual lockdown circumstances, like the size of their family, and finished a sequence of brief, verified surveys to record pain, cognition relating to pain and psychological well-being. Participants have previously

completed self-report differential assessments showing their own estimation of how their discomfort has changed, physical activity, as well as health compared to pre-COVID levels, a sequence of VAS recorded present pain and levels of well-being. Last, participants filled out a set of brief, validated questionnaires to assess psychological well-being, pain, and cognition linked to pain.

3.3 Lockdown Circumstances and Participants

There were 519 participants. 470 girls, 45 men, and 4 people who picked "other" made up the total. The ages varied from 18 to 79 (43.9813.38, meanSD). A variety of chronic pain conditions were represented among the chronic pain responders (N=431). Based on the major causes of their discomfort, their initial diagnosis was categorized using the World Health Organization's International Classification of Diseases, 11th Revision (ICD-11), shown in table 1. When a precise analysis provided by the patient showed a pertinent pathology involved with their chronic pain, further information was noted. ICD-11 codes for these further specifics are shown in table 1. The proportion of individuals in each categorization of chronic pain who had these analyses is shown by ratios. Following their prior consent to be approached for experimental reasons, a subset of respondents with chronic pain (N=85) and discovered through contact with a higher-level pain hospital in the area.

Similar online gathering of data was done by this subgroup as it was by the other participants. But baseline information on pain (10-point Numerical Rating Scale (NRS)) and behavioral indications were accessible for differentiation inside this subgroup. In the six months before the UK shutdown, this information had been gathered at a face-to-face assessment meeting to determine eligibility for a pain management program. Last but not least, 88 non-pain control participants were also included in the sample, and they were age and sex-matched.

Table 1: ICD-11 recommendations for the count of patients matching every category of diagnosis and illness code of identification

Section	Codes in ICD-11	Patient counts
Persistent primary/secondary visceral pain	MG20.10, MG 20.5, DD81.1, DD96, GA11.Z	17
Regional complex pain syndrome	8D9A.0Z	7
Primary or secondary chronic either a headache or face discomfort	MG30.04, 8A81.Z, 8A83	13
Chronic postsurgical or posttraumatic pain	MG30.3	12
Chronic primary/secondary musculoskeletal pain	MG30.03, MG 30.4 FA21.Z, FA22.Z, LD26.4, LD28.2Y.	175
Unspecified or other	MG31.Z, 4A63, 8D65.Z	13
Persistent neuropathic pain	MG 20.6 MG20.51, GA35.0Y, NA04.5, NA42.Z	52
Chronic widespread pain	MG20.02	151

3.4 Data Sharing and Morality

The study was carried out in accordance with the Declaration of Helsinki's guidelines, and it received approval from the University of Liverpool's local research ethics committee

4. Result and discussion

In In this section, discuss the findings of the data reduction results, the effect of lockdown on pain threshold, Participants with chronic pain respond differently to lockdowns than those without discomfort, the effects of depression on persons with chronic pain are mediated by pain catastrophizing, which is related to self-perceived increases in pain through confinement. Participants in lockdown for chronic pain self-report modifications to well-being and exercise that are related to report raised pain.

4.1 Data compression

933 people in all retrieved the research. 135 people failed the screening processes tests because they did not meet the exclusion requirements, which included being over 18 and living in the UK at the time of the pandemic. After reading the information page, 21 more people decided not to provide their permission. A total of 193 participants started the research but left before completing a sufficient number of the questions to be eligible for inclusion (90%), and 65 participants agreed to participate but did not finish even one of the items.

4.2 Lockdown's Impact on pain threshold

A 100 point VAS was used to assess the respondents with chronic pain's impression of their mean pain intensity during the previous week. The respondents were also asked to indicate the difference in the severity of their pain from a usual week before the lockout. The average score for pain severity for the chronic pain category was 67.65, with a standard deviation of 17.94. On the variation in VAS, respondents with chronic pain indicated a statistically important rise in their pain compared to the pre-COVID period, according to a unilateral t-test analysis ($p < 0.001$). The difference ratings were converted to a numerical score ranging using negative numbers from -100, indicating decreased pain, ranging from to +100, with higher numbers indicating more pain (zero values were equivalent to no observed difference). The group with persistent pain's mean change was 34.66 ± 38.21 (mean SD), showing a substantial raised in pain as reported by the participant differentiated to the time previously to the epidemic; $t(431) = 19.78, p < 0.001$. Table 2 displays the mean PCS (Pain Catastrophizing Scale) scores and pain severity ratings for each time point.

Table 2: 85 people with chronic pain had mean pain intensities (SD) and scores on pain catastrophizing

	Lockdown	Before-COVID
The severity of the pain	8.26±2.38	8.55±2.64
PCS	28.29±12.49	28.89±14.09

4.3 Effect of lockdowns on participants with chronic pain compared to those without pain

According to reports of the perception of anxiousness and despair, reductions in activity, and higher ratings for loneliness and tiredness, we hypothesized that individuals with chronic pain would display more negative impacts of lockdown circumstances. For comparison of average scores across all variables for the non-pain groups, and chronic pain, separate sample t-tests were used. In comparison to those who did not experience pain, the chronic pain group reported considerably more negative consequences for all variables. The average scores and comparative data for each group are shown in Figure 1 and Table 3.

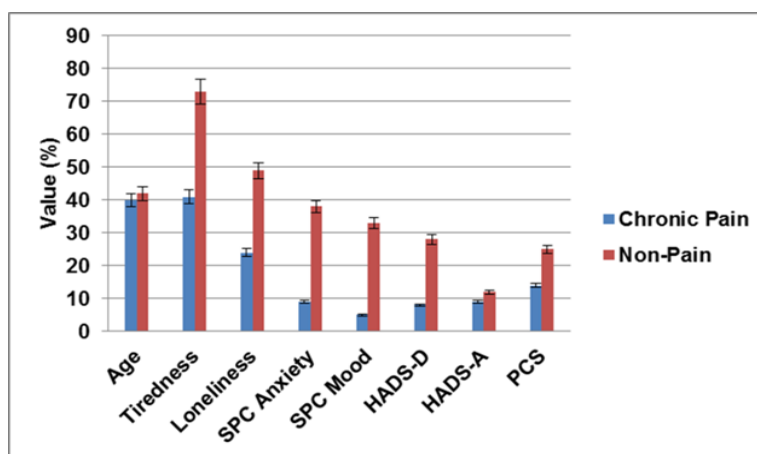


Figure 1: Mean values based on self-reports with usual error bars

Table 3: Demographic information for respondents with and without chronic discomfort

	Non- pain	Chronic pain	p	t	df
Sex	88.8% Female	90.8% Female	.56	-0.55	514
Age	41.22±14.97	43.95±13.02	.11	1.58	113.88
Self-isolating	6.82%	39.69%	<.001	9.27	239.67
Any other illness	6.82%	28.08%	<.001	4.64	162.61
Anxiety SPC	7.21±42.25	39.37±42.08	<.001	6.54	518
Depression SPC	4.12±41.53	34.64±41.38	<.001	6.31	518
Exercise reduction SPC	3.85±57.38	28.68±56.05	.001	3.78	513
Tiredness	41.67±26.34	75.27±21.04	<.001	11.27	111.787
Loneliness	25.44±24.46	49.88±	<.001	8.17	148.41
HADS-A	7.36±3.58	11.57±4.43	<.001	9.57	146.34
HADS-D	5.36±3.45	9.85±4.35	<.001	9.08	513
PCS	12.25±11.35	25.97±12.75	<.001	9.22	507

The Compared to the non-pain group, individuals with chronic pain reported greater increases in anxiety and depressive mood as a result of lockdowns. In contrast to the non-pain group, they additionally report important decreases in activity volume as differentiated from the pre-COVID period. The assessments of loneliness and exhaustion for the previous seven days were greater for individuals with chronic pain than for those without pain. Unsurprisingly, respondents with chronic pain had higher HADS (Hospital Anxiety and Sadness Scale) sadness and anxiety scores and higher PCS ratings than respondents without pain. In addition to reporting higher levels of any other sickness in the previous two weeks (apart from chronic pain), respondents with chronic pain also had a greater probability of entirely self-isolating owing to their highest danger level.

4.4 Participants in lockdown for chronic pain self-report modifications to well-being and exercise that are related to reporting raised pain

According to our hypothesis, the degree to which we experienced rises in our chronic pain group's pain levels were predicted by self-reported variations in terms of exercise levels and psychological well-being. After managing for contributor sex, age, and reports of other illnesses in the previous two weeks, a multiple regression analysis using a hierarchy was conducted to determine if levels of self-reported modifications to depressed mood, anxiety, and level of physical activity would be a predictor of self-reported alterations in pain intensity. To make sure it was determined by early research that the assumptions of normality, collinearity, and homoscedasticity were not violated.

Step1: Participants' sex, age, and reports of further illnesses were incorporated as the three confounding factors in the model. There was no statistical significance for this particular model. As shown in table 4, $F(3, 416) = .45$, $p = .74$, and clarified 0.6% of the variation in self-reported variation in pain intensities.

Step2: After including self-reported increases in sadness, depression, and exercise, the model's total variance described 11% of the variation ($F(6, 416) = 8.88$; $p < .001$). After adjusting for participant sex, age, and reports of further illnesses, the predictor factors added an extra 11% of the variation in self-reported variations in pain ($R^2 \text{ Change} = .11$; $F(3, 416) = 17.97$; $p < .001$).

Two of the three predictor variables were statistically important in the final modified model. The greatest significant rate was self-reported variations in exercise ($\beta = .18$, $p < .001$), monitored by variations in gloomy mood ($\beta = .18$, $p = .009$). An unimportant predictor ($\beta = .11$, $p = .078$) was changed in the anxiety stages.

Table 4: Modelling of self-reported variations in pain intensity using hierarchical regression

	β	SE	B	t	p	R^2 change	R	R^2
Step 1						.006	.072	.006

Sex	.04	6.53	4.03	0.63	.55			
Age	.04	0.15	0.09	0.56	.59			
Any other illness	.06	3.98	4.36	1.08	.29			
Step 2						.12	.35	.12
Sex	.08	6.24	8.84	1.43	.17			
Age	.06	0.14	0.14	0.98	.34			
Any other illness	.03	3.82	1.47	0.37	.71			
Anxiety change	.12	0.07	0.11	1.78	.09			
Mood change	.18	0.07	0.16	2.68	.009			
Exercise change	.18	0.04	0.12	3.56	<.001			

4.5 The influence of depression on individuals with chronic pain is mediated by pain catastrophizing, which is related to self-perceived increases in pain through confinement

There was a mediation regression analysis carried out to see if pain catastrophizing may operate as a facilitator and predictor of the association among self-reported variations in mood and activity and assessed stages in pain intensity through the lockdown. A middle step was added to the previous multiple regression model in a hierarchy in order to repeat it. PCS scores were inserted as a mediator variable after adjusting for the confounding factors, followed by differences in predictors.

Step1: In Step 1 of the model, participant sex, age, and reports of additional illnesses were added. Table 5 demonstrates that these factors were not statistically significant, with $F(3, 416) = .68, p = .56$.

Step2: The overall variation explained by the model after the PCS scores were included in Step 2 was 12% ($F(4, 415) = 13.58; p < .001$). After adjusting for participant statistics, PCS scores clarified an extra 11% of the variation in self-reported shifts in pain ($R^2 \text{ Change} = .11; F(1, 412) = 51.97; p < .001$).

Step3: Self-reported shifts in mood, sadness, and activity stages were included in Step 3 of the design, and this resulted in an overall variance explanation of 18% ($F(4, 411) = 12.63; p < .001$).

Table 5: Self-reported change in pain intensity using a hierarchical regression model using PCS scores as a mediator

	β	SE	B	t	p	R ² change	R	R ²
Step 1						.006	.072	.006
Sex	.04	6.56	4.03	0.62	.55			
Age	.04	0.15	0.09	0.56	.59			
Any other illness	.06	4.02	4.36	1.08	.29			
Step 2						.12	.35	.12
Sex	.02	6.19	1.91	0.32	.77			
Age	.09	0.14	0.23	1.68	.11			
Any other illness	.02	3.83	0.58	0.16	.89			
PCS	.35	0.15	0.97	7.22	.01	.178	.43	.07
Step 3								
Sex	.05	6.07	5.82	0.95	.35			
Age	.09	0.14	0.24	1.75	.09			
Any other illness	-.02	3.72	-0.78	-0.22	.84			
PCS	.28	0.15	0.79	5.64	<.001			
Anxiety change	.10	0.06	0.08	1.38	.18			
Mood change	.12	0.07	0.11	1.78	.09			
Exercise change	.17	0.04	0.11	3.46	.002			

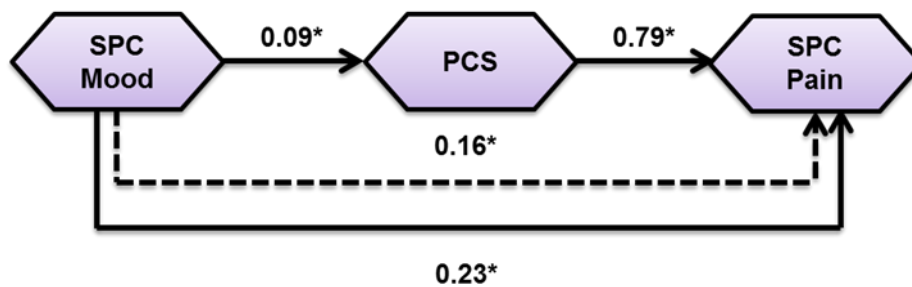


Figure 2: Self-perceived mood fluctuations and pain levels are correlated, with pain catastrophizing acting as a mediating factor

Self-perceived alterations in feel were shown to be strongly correlated with shifts in the degree of pain after controlling for the impact of the covariates, as shown in Figure 2, including and excluding the addition of pain catastrophizing stages as an arbitrator. Indirect outcome=0.07, Standard Error (SE) = 0.03, 95% (Convergence Insufficiency) CI=0.05 to 0.12; analysis indicated a substantial mediating role for individual degrees of pain catastrophizing in the link with self-perceived shifts in attitude and agony levels.

5. Conclusion

The current outcomes are significant since they are the first experiential evidence to show that those with chronic pain suffer worse under lockdown. Particularly, those with chronic pain compared to the control group, which did not encounter pain, those who had it reported higher degrees of self-perceived pain as well as more severe lockdown side effects. The results highlight the urgent need for further study into attempts to modify remote healthcare services and to determine whether lockdown's negative impacts on vulnerable populations are important enough to take into account when creating guidelines and enforcing limits for certain groups. We draw attention to the possible significance of pain catastrophizing and decreased exercise in the experiences of persons with the pain of chronic under lockdown circumstances. This is important because it identifies possible medical goals for behavioral and then therapeutic treatments in the present and next crises. With further study, attempts to focus on remote pain care may be quickly modified to reduce degrees of catastrophic agony, especially in patients who are very catastrophizing, and to encourage physical activity as the epidemic progresses.

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