Original Article

Effects of COVID-19 pandemic on management of patients with chronic pain

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Abstract

Background and Aims: Coronavirus infectious disease 2019 (COVID-19) pandemic is one of the most important global health-care challenges to have emerged in the recent past. Just like most other medical specialties, the field of chronic pain was one of the hardest hit from the COVID-19 pandemic, leaving many patients overburdened with their chronic pain and their ongoing treatment delayed. We aimed at studying the effects of COVID-19 pandemic on the management of chronic pain patients.
Material and Methods: This prospective observational study was conducted on 150 patients of either sex, aged >18 years, presenting to pain management center with chronic pain conditions for >3 months. Responses were recorded against a designed questionnaire, and data was analyzed.
Results: Majority of the patients were females, with the mean age of 50 ± 13 years, belonging to the middle socioeconomic status, with the most common sites of pain being low back, knee, and neck. There was significant increase in the intensity and frequency of pain, which also affected sleep, working capacity, and mental health of the individuals. More than half of the interventional pain procedures were delayed. Fear of contracting infection decreased follow-up in the outpatient department, and most of the patients continued taking over-the-counter drugs and few took teleconsultation.
Conclusion: There is an urgent need to develop various training programs for health-care providers and patients to have better utilization of resources to provide uninterrupted and safe treatment services for chronic pain patients during a pandemic.

Keywords: Chronic pain, COVID-19, pain management, pandemic

Introduction

Coronavirus disease 2019 (COVID-19) pandemic has had a profound effect on health care and patients with chronic pain. Chronic pain is a significant medical and socioeconomic problem that affects 13%–47% of the general population worldwide and is more common in elderly.[1] The prevalence rate of chronic pain burden in India is 19.3%.[2] The field of chronic pain was one of the hardest hit from the COVID-19 pandemic, leaving many patients overburdened with their chronic pain and their ongoing treatment delayed. To mitigate the spread of COVID-19, in-person access to physicians was limited. The health-care professionals were diverted to COVID-19–related activities. Patients were less able or willing to travel for care, as they were fearful of exposure to infection in a public or medical setting. There were delays in timely access to medications as well as interventional pain management procedures. Delaying or stopping treatment for chronic pain has negative consequences for patients, including increases in pain, disability, depression, addiction, and an increased health-care burden.[3]

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Material and Methods

This prospective observational study received approval from the institutional ethical committee and was registered at clinical trials as CTRI/2022/05/042685. One hundred and fifty patients of either sex, aged >18 years, presenting to the pain management center with chronic pain conditions for >3 months were included in the study after obtaining a written informed consent from them. Patients with acute pain conditions or requiring admission/indoor care were excluded from the study.

All patients were subjected to detailed clinical history and examination in the pain clinic. The imaging studies, if any, were reviewed. Numeric Rating Scale (NRS; 0–10) for assessment of pain was explained to patients. To make a clear point of reference for respondents, the questions were asked since the COVID-19 pandemic started, which was the same for the whole country. The questions were asked in the questionnaire form, and the responses of patients were recorded. The questionnaire included the demographic profile, effects of pandemic on occupation, distribution, intensity, frequency, and character of pain, details about follow-up in the pain clinic, reasons for not following up, management/coping strategies, comorbidities, effect on sleep, emotional and mental health, planned interventional pain procedure, and history of being infected by COVID-19. At the end of the study, the data was compiled and analyzed statistically.

Analysis of data was performed using Statistical Package for the Social Sciences version 20.0 (IBM SPSS Statistics Inc., Chicago, IL, USA). Continuous parametric variables were expressed as means and standard deviation, while continuous nonparametric variables were expressed as median and interquartile range. Categorical variables were expressed as percentages. Comparison of median NRS score from baseline over follow-up was done using Friedman's two-way analysis of variance by ranks. Comparison of categorical variables was done using Chi-square test. *P* value less than 0.05 was considered statistically significant.

Results

One hundred and seventy-five patients were assessed for eligibility. Twenty-five patients were excluded either because of not meeting the inclusion criteria or their unwillingness to participate in the study. For data analysis, there were a total of 150 patients with chronic pain conditions. Demographic profile of the patients has been summarized in Table 1.

It is important to determine how chronic pain patients, living through COVID-19 pandemic crisis, perceived and experienced the situation as it could have a greater impact on them. Pain profile parameters have been summarized in Table 2.

Table 1: Demographic profile of patients

Demographic parameter	Number	Frequency (%)
Age		
21–30 years	11	7
31–40 years	27	18
41–50 years	38	25
51–60 years	38	25
61–70 years	27	18
71 years and above	9	6
Sex distribution		
Male	36	24
Female	114	76
Educational status		
Without formal education	31	20
Primary school	12	8
Middle school	34	22
High school	49	32
Graduate	14	9
Postgraduate	10	6
Occupational status		
Household	106	71
Retired	5	3
Student	2	1
Employed	26	17
None of the above	11	7
Residence		
Rural	73	48
Semi-urban	31	21
Urban	46	31
Economic status		
Low	51	34
Middle	95	63
High	4	3
Marital status		
Never married	3	2
Married	127	85
Widowed/separated	20	13

COVID-19 pandemic led patients develop coping strategies to manage the pain. Chronic pain patients with comorbidities were the hardest hit among all. Patients also reported sleep, daily activities, working capacity, and emotional/mental health being affected as a result of chronic pain during the pandemic. Table 3 summarizes the pain management, coping strategies, association of chronic pain with comorbidities, and effects on daily activities, sleep, working capacity, and mental/emotional health.

There is growing evidence that COVID-19 was associated with myalgias, referred pain, and widespread hyperalgesia.[3] There can be worsening of chronic pain due to exacerbation of preexisting pain condition. Chronic pain may be newly triggered in individuals not infected with COVID, by exacerbation

Table 2: Pain profile parameters

Parameter		Number	Frequency (%)
Site	Knee pain	44	29
	Low back pain	83	55
	Shoulder pain	6	4
	Lower limb pain	8	5
	Neck pain	34	22
	Headache	6	4
Duration	<1 year	21	14
	1–2 years	26	17
	2–3 years	39	26
	3–5 years	47	31
	5–10 years	12	8
	>10 years	5	3
Frequency	Always	53	35
	Daily	67	45
	Three or more episodes per week	30	20
Change in frequency	Yes	101	67
	No	33	22
	Could not evaluate	16	11
Chase in intensity	Yes	122	81
	No	16	11
	Could not evaluate	12	8
NRS score (median)	In the last week	8	*P*<0.001
	In the last month	7	
	In the last 3 months	5	
Character	Continuous	6	4
	Episodic	63	42
	Continuous with intermittent exacerbations	81	54
Follow-up	Regular	Not regular	*P*<0.001
Before the pandemic	139	11	
During the pandemic	3	147	
Reasons for lack of follow-up[a]	Travel restrictions	42	28
	Fear of contracting COVID	91	60
	Intermittent closure of OPD/assumption of nonavailability of pain physician	82	54
	Advised against visiting by family	65	43

[a]*Multiple options selected. COVID=Coronavirus disease, OPD=Outpatient department*

of risk factors like poor sleep, inactivity, fear, anxiety, and depression.[4] Table 4 summarizes the COVID-19 profile of the patients with chronic pain included in the study.

Discussion

COVID-19 is characterized by systemic inflammation, marked by increased levels of c-reactive protein, interferon gamma, interleukin (IL)-1β, IL-6, IL-8, IL-17, and tumor necrosis factor-alpha. Increased production of IL-1β and IL-6 is associated with muscle fibrosis. Nuclear factor-kappa B (NF-κB) hyperactivation through pattern recognition receptor activation as a result of COVID-19 mediates the release of proinflammatory and inflammatory cytokines and increases pain hypersensitivity. Upregulation of NF-κB is also associated with fibromyalgia and neuropathic pain. Furthermore, expression of angiotensin converting enzyme in the skeletal muscle, synovium, and cortical bone increases the susceptibility of these tissues to severe acute respiratory syndrome-coronavirus 2 infection.[5,6]

In our study, the mean age of the patients presenting with chronic pain conditions was 50 ± 13 years. Maximum patients were in the age group of 41–60 years. Similarly, in a study conducted by Nieto *et al.*,[7] 58.8% of patients belonged to the age group of 41–60 years. Other studies conducted on the impact of COVID-19 pandemic on chronic pain disorders reported a similar mean age of distribution.[8-13] Thus, age seems to play a major role in chronic pain disorders. Overall, as evident from the present study and the previous research available, females have a predisposition to chronic pain conditions.[8-13] In general, as evident from present and previous studies, no significant association can be found between the level of education and chronic pain conditions.[7-9,11,13] In the present study, a vast majority of patients were not employed and were involved in

Table 3: Pain management, coping strategies, association of chronic pain with comorbidities, effects on daily activities, sleep, working capacity, and mental/emotional health

Parameter	Number	Frequency (%)
Management of pain[a]		
Bearing pain and not taking treatment	41	27
Continuing past treatment on their own	63	42
Consulting physicians of other departments	6	4
Consulting physicians near residence	30	20
Taking over-the-counter medications	109	72.66
Teleconsultation availed		
Yes	18	12
No	132	88
Person consulted on teleconsultation		
Primary pain physician	18	12
Physician of other department	0	0
Physician outside the institute	0	0
Coping mechanisms adopted[a]		
Rest	141	94
Stretching	33	22
Exercise	60	40
Alcohol/smoking	16	10
Pain medication	136	90
Social support	8	5
Meditation	2	1
Yoga	7	4
Cycling	2	1
Others	1	-
Comorbidity[a]		
Diabetes	11	7
Hypertension	26	17
Hypothyroidism	6	4
Asthma	1	-
CAD/IHD	5	3
Rheumatoid arthritis	2	1
Herpes zoster	1	-
Ca breast	1	-
Activities affected		
Everyday activities	41	27
Walking/exercise	76	50
Working capacity	124	82
Sleep		
Decreased	27	18
Difficult	1	-
Disturbed	38	25
Emotional/mental health		
Anxious	19	12
Depressed	7	4
Both anxious and depressed	4	2
Others	4	2
Normal	116	77

[a]Multiple options selected, CAD/IHD= Coronary artery disease / ischaemic heart disease

Table 4: COVID-19 profile of the patients with chronic pain

Parameter	Number	Frequency (%)
History of COVID-19		
Present	28	18
Absent	122	81
Change in pain frequency after COVID-19		
Increase	25	16
Decrease	0	-
No change	3	2
Symptoms experienced*		
Fatigue	26	17
Myalgia	24	16
Headache	10	6
Fear of being infected with COVID-19		
Present	124	82
Absent	26	17
Family history of COVID-19		
Present	10	6
Absent	140	93
History of quarantine in the family		
Present	9	6
Absent	141	94
History of death due to COVID-19 in the family		
Present	2	1
Absent	148	98
Interventional pain procedure planned		
Yes	35	23
No	115	76
Whether the procedure was conducted on schedule		
Yes	13	8
No	22	14
Reason for the procedure not conducted		
Pain OT closed	12	8
Could not come	23	15
Did patients feel they still required interventional pain procedure at the time of study interview?		
Yes	30	20
No	4	2
Don't know	1	-

**COVID-19=Coronavirus disease 2019, OT= Operation theatre*

household activities. In a study conducted by Lacasse *et al*.,[11] 65% patients were involved in household activities, coherent with present study. This could be because India is predominantly an agriculture-based country and females belonging to rural areas usually are home makers and are involved in household activities. The varying socioeconomic status of the patients in our study and previous study suggests that there is no significant association between chronic pain and socioeconomic status and all the strata of people are affected by chronic pain.[14] The marital status of patients does not seem to have a significant effect since both married and unmarried people are affected by chronic pain conditions.[8,13,14] Nearly one-third of the patients in our study had comorbidities. The presence of comorbidities in chronic pain patients can worsen the pain, especially in patients with diabetes mellitus and hypothyroidism.

Overall, COVID-19 pandemic rendered the health-care infrastructure vulnerable, affecting all the sectors of health care, leaving them overwhelmed and burdened. Chronic pain management is a part of semi-urgent services, which was equally affected adversely along with other areas of health-related services. As observed in the current and previous studies, COVID-19 pandemic was associated with changes in intensity, frequency, and quality of pain.[7,10-13] It is evident that the increase in NRS score during the COVID-19 pandemic is significantly higher. In our study, a large majority of patients had low back, knee, and neck as their primary sites of pain. In our study, 20% patients had multiple sites of pain as well. Nieto *et al*.[7] also observed similar pain patterns, but 87% patients had pain at multiple sites. Studies show a widespread variability in the mean duration of the pain.[7,8,11,12]

Only 2% of patients followed up in the pain clinic during the pandemic. The main reasons for lack of follow-up during the pandemic were fear of contracting COVID-19, intermittent closure of outpatient department, assumption of nonavailability of pain physician, family members advising patients not to visit the hospital, and travel restrictions. There was a definitive worsening of mental health and sleep quality among the chronic pain patients during the pandemic.[7,12-14]

The pain management strategies adopted by the patients were taking over-the-counter medications, continuing past treatment on their own, bearing pain and not taking any treatment, and consulting physicians telephonically or near the residence or consulting physicians of other departments in the institute. "Telemedicine" became the most popular mode among all to provide contactless health-care services including chronic pain management.[13] Lack of knowledge and understanding, fear of social isolation, and stigma associated with COVID infection made them to avoid getting tested and reporting, which may be the reason of less percentage of COVID-positive patients.[7,8,11,12] More than two-thirds of the patients could not get their interventional pain procedure done on time, which might have played a negative role in management of chronic pain patients, as well as might have contributed to an increase in pain severity in them. This study has some limitations. It was an observational, single-day, single-centric, subjective, and questionnaire-based study. Further epidemiologic studies including multiple centers and quantitative and objective variables of pain should be conducted to focus on pain in the postpandemic era.

During the state of pandemic, it is imperative to ensure continuous treatment to chronic pain patients. There is an urgent need to develop various training programs for health-care providers, patients, and caregivers to have better utilization of digital resources and to make available a widened spectrum of management and coping strategies for chronic pain patients. All these factors should be taken into consideration in the pandemic/postpandemic era to provide uninterrupted and safe treatment services for chronic pain patients.

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Conflicts of interest

There are no conflicts of interest.

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