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### Article

**Citation** (please note it is advisable to refer to the publisher's version if you intend to cite from this work)

**Karos, K, McParland, JL, Bunzli, S, Devan, H, Hirsh, A, Kapos, FP, Keogh, E, Moore, DJ, Tracy, LM and Ashton-James, CE The social threats of COVID-19 for people with chronic pain. Pain. (Accepted)**

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1                   **The Social Threats of COVID-19 for People With Chronic Pain**

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22  
23   Number of pages: 25

24   Number of figures: 1

25   Number of tables: 1

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1 **1. Introduction**

2           The COVID-19 (SARS-CoV-2) pandemic has changed the social environment in  
3 which people live and work, as well as the social systems they rely on [39; 88]. To contain  
4 the spread of coronavirus and to prepare for a dramatic increase in demand for limited  
5 hospital/medical facilities and resources, societies have enforced physical distancing  
6 measures. Consequently, there have been limitations on the use of public transportation,  
7 public spaces, and work, education, and recreational facilities. Further, access to vital, but  
8 non-urgent, healthcare services (including pain management services) has been restricted.  
9 These changes have affected the way people connect with each other, manage their health  
10 and wellbeing, and fulfil their social roles. For some, these changes may present opportunities  
11 (e.g. increased time with family, normalisation of flexible working, reduced demand for  
12 travel). For others, however, these social changes can also represent significant threats to  
13 health and wellbeing.

14           The negative impact of social changes prompted by the COVID-19 crisis may  
15 disproportionately affect individuals living with long-term painful conditions. Living with  
16 chronic pain can threaten an individuals' fundamental social needs for autonomy (agency or  
17 independence), belonging (social connection), and justice (fairness). In turn, for some,  
18 experiencing heightened social threat can maintain and exacerbate chronic pain [48]. In this  
19 review, we draw attention to the potential for social and systemic changes associated with  
20 attempts to contain the spread of COVID-19 to precipitate, maintain and exacerbate pain by  
21 increasing the social threats faced by individuals with chronic pain (see Figure 1). We also  
22 suggest strategies for mitigating the social impact of COVID-19 on those living with chronic  
23 pain, for instance by learning from the resilience demonstrated by people in pain who have  
24 found ways to deal with social threat. Lastly, we suggest several time-critical, high-impact  
25 research questions for further investigation.

1 --- INSERT FIGURE 1 ---

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## **2. Social threats posed by the COVID-19 pandemic**

### *2.1 Social disconnection and loneliness*

One of the most immediate effects of the pandemic on our social lives is the introduction of physical distancing measures and restriction of travel. It is well-known that spontaneous social interactions with others and participation in social roles can build and maintain a generalised sense of trust in others (social capital), promote feelings of wellbeing [76], provide protection from the harmful effects of stress [95], promote social connectedness, and reduce pain sensitivity [91]. Conversely, social isolation is associated with loneliness, higher levels of depression and anxiety, poorer health behaviours, poorer sleep, higher blood pressure, poorer immune function, and pain [40; 42].

Chronic pain conditions place individuals at an increased risk of social isolation, smaller social network size, and reduced social role functioning [37; 38; 78], all of which have negative implications for pain interference and pain intensity over time [7; 31; 47]. Indeed, disruption to social roles and relationships is one of the most distressing aspects of living with chronic pain [81]. Physical distance from others and reduced participation in work and social activities can cause people to feel lonely or socially distanced from others [73], and there are concerns that the COVID-19 pandemic will lead to a steep rise in the prevalence of loneliness [5; 22; 35; 39]. People living with chronic pain, who may have entered the pandemic with fewer social resources than others, may be particularly vulnerable to feelings of loneliness and social disconnection at this time. Unless individuals have the ability and means to maintain meaningful connections with others despite physical distancing measures, being physically isolated from others threatens to exacerbate pain and associated disability.

## 1 2.2 *Risk of increased social proximity*

2           The paradox of COVID-19 is that being physically isolated from one's community  
3 can mean living in closer proximity to one's household members. People living with chronic  
4 pain conditions may benefit from more frequent contact with family members, as closer  
5 proximity offers more opportunity to improve social bonds. However, enforced close-  
6 proximity living could also bring challenges to autonomy and independence. While social  
7 support can help buffer against pain [14; 15; 18; 56], an increase in solicitous behaviours in  
8 such close proximity might unintentionally contribute to the chronicity of pain [34; 43; 72].  
9 For example, in households where a child is in pain, increased social proximity could lead to  
10 increased exposure to protective parental behaviours and reductions in child autonomy and  
11 activity. Conversely, family members could become desensitised to the pain of others, or  
12 even become avoidant, risking further isolation for individuals living with pain. Those living  
13 with pain may experience increased feelings of guilt in response to increased support,  
14 especially if they perceive themselves to be a burden [50; 75]. Alternatively, fear of rejection  
15 could lead to masking pain from others in shared living spaces; preventing individuals with  
16 pain from asking for help in order to meet their needs [13; 65].

17           There is also a risk that for people living with chronic pain, living in close proximity  
18 and enclosed environments could increase exposure to interpersonal conflict [63; 69], which  
19 is known to amplify pain and disability [11; 26; 36; 61]. For some, COVID-19 has brought  
20 about increased risks of conflict among household members, as they deal with the stresses  
21 associated with unexpected financial pressures, job insecurity, and unemployment [21]. Many  
22 people are struggling to juggle multiple social roles and responsibilities – supporting children  
23 with schoolwork, working from home, and parenting – leading to emotional exhaustion.  
24 Women in particular, are likely to carry a greater social burden and greater responsibility for

1 childcare during COVID-19 [1; 92]. Critically, domestic abuse has increased during the  
2 COVID-19 lockdown [10], which has also been shown to contribute to chronic pain [2; 60].

3

### 4 *2.3 Reduced access to high quality pain management*

5 COVID-19 potentially poses a significant challenge for patients seeking to access  
6 pain management. Although pain management is a fundamental right [23], the health system  
7 responses to mitigate the impact of COVID-19 may significantly affect access for patients  
8 with complex medical conditions (e.g., people with comorbid mental health conditions and  
9 addiction) and widen existing inequities in relation to pain management for socially  
10 disadvantaged populations [90]. For some people with chronic pain, the pandemic might  
11 bring life stressors that result in pain flare-ups, and increase the need for pain services [77].  
12 Furthermore, individual pain experiences may not be considered as immediately important  
13 when compared to the need to treat life-threatening symptoms associated with COVID-19  
14 [12], leading to less help-seeking and psychological distress.

15 Pain management during this pandemic for clinicians involves balancing access to  
16 care with minimising safety risk from exposure to COVID-19 for vulnerable patients and  
17 clinicians themselves [79]. Cancelled elective surgeries, closure of pain management  
18 services, and redeployment of clinicians to other areas of care all result in limited access to  
19 high quality care. Consequently, the increased burden on healthcare workers may result in a  
20 greater focus on biomedical management (e.g. opioid prescribing), rather than psychological  
21 and interdisciplinary treatment approaches. While this may be deemed necessary in the  
22 context of the pandemic due to heightened needs from patients for pain relief, clinicians and  
23 patients may not agree on opioid prescription/de-prescription [66]. In addition, the individual  
24 assessment required to address the risks and benefits of opioid use and the monitoring of its  
25 use [85] may be complicated by a lack of access to face-to-face pain services.

1           In the absence of the availability of face-to-face contact, telehealth is increasingly  
2 being recommended as a first line of care for patients [19], including those with chronic pain  
3 [29]. The rapid transition to telehealth in response to physical distancing regulations allows  
4 people to access high quality care without travelling, potentially increasing patient access to  
5 care. It also opens up new opportunities and enables us to think about new ways of delivering  
6 pain management. On the other hand, this mode of delivery may be particularly challenging  
7 for vulnerable groups due to poor health status and low technological literacy [71]. Even  
8 when services are delivered via telehealth, the fear of sharing confidential information from  
9 home and juggling multiple social responsibilities, particularly for women, pose further  
10 barriers to engaging in high quality care [64]. In the context of delivery, practical challenges  
11 in conducting multidisciplinary treatment via telehealth [77] may lead to a prioritising of  
12 individual over multidisciplinary approaches. This is despite evidence that care delivered via  
13 telehealth can be as effective as face-to-face care for people experiencing pain conditions  
14 [55].

15

#### 16 *2.4 Exacerbation of social injustice and social inequalities*

17           COVID-19 is exacerbating existing social injustices and inequalities. Extreme events  
18 such as terrorist attacks and natural disasters [32; 44; 96] are known to undermine the  
19 fundamental belief that the world is just, stable, orderly, and predictable [52], with  
20 ramifications for perceived life control, future prospects, and well-being [67; 86]. This is  
21 particularly relevant to chronic pain, as commitment to the belief in a just world can buffer  
22 against its adverse effects [57]. A pandemic-initiated violation of just-world beliefs could  
23 exacerbate perceived injustices associated with pain [16]. For example, physical distancing  
24 policies could further increase social isolation and potentially worsen perceived injustices  
25 [80], while disrupting social networks that are sources of justice and support [74] may

1 heighten perceptions of invalidation among those with pain, driven by the sense that one does  
2 not matter to others [17].

3         Variation in the effect of COVID-19 illustrates social inequalities around pain, and  
4 healthcare more generally. There are known individual differences in pain associated with  
5 social identities, including gender, ethnicity, and age [6; 33]. There are also social  
6 inequalities and biases, which can affect pain burden [25] and access to pain care [24; 82].  
7 Structural and individual biases towards minority and marginalized groups that are  
8 heightened by uncertainty, stress, and fear [49], are likely to be exacerbated by COVID-19.  
9 Discrimination experienced by marginalized groups can affect peripheral and central  
10 processes, including immune functioning [20; 28; 83], thus compounding the negative effects  
11 associated with the stigmatization of chronic pain [26].

12         Those living in poorer and/or more remote communities have higher rates of chronic  
13 pain and comorbidities [60; 62] and limited access to healthcare, which can lead to greater  
14 unmanaged pain and disability [3; 4]. Reduced access to healthcare, higher costs, and  
15 language might form additional barriers to pain management in these communities (e.g.,  
16 refugees). For example, disabling chronic pain can be more prevalent in Indigenous  
17 populations, who are also less likely to access support services [3; 4; 8]. Travel restrictions  
18 imposed to limit the spread of COVID-19 into remote communities are likely to disrupt the  
19 provision of non-essential services, further limiting access to pain care. Socioeconomic  
20 disadvantage also increases vulnerability to disease, including COVID-19, through many  
21 potential pathways including lower social support [89], overcrowding, poorer sanitation,  
22 neighbourhood and housing conditions, and poorer health behaviours (e.g. smoking, diet,  
23 alcohol consumption, reduced exercise) [9; 70]. Further, while people from lower  
24 socioeconomic backgrounds are over-represented in 'essential' employment sectors which  
25 have been largely spared from COVID-19-related redundancies, many of these employees are



1 now facing longer working hours under more demanding conditions. All these factors could  
2 not only lead to increased risk of exposure to COVID-19, but also, if left untreated,  
3 exacerbate other conditions, including chronic pain. In short, COVID-19 has  
4 disproportionately affected socially disadvantaged groups, and the ensuing global economic  
5 fallout could magnify these inequalities in pain further [90]. The concern is that the most  
6 economically disadvantaged will be most likely to be exposed to the hazard, most susceptible  
7 to harm from it and most likely to experience negative outcomes from it [88].

8

### 9 **3. Responding to social threats posed by COVID-19**

10 The wide range of social threats that COVID-19 brings to those in pain means that no  
11 one response will address all these issues. However, by identifying such threats we can start  
12 to think of more focused and targeted approaches. For example, just as some treatments have  
13 moved online, it may also be possible to mitigate some of the impacts of physical distancing  
14 and social isolation using technology. Social media platforms, due to their wide reach and  
15 penetration, can help disseminate key information about COVID-19, providing virtual  
16 support to enhance social connectedness [58]. People with pain already report using digital  
17 peer-support groups to connect with similar others and derive benefits from feeling validated  
18 and heard [59]. Online peer-support could potentially be used to help reduce felt social  
19 distance while maintaining physical distance. Increasing digital social connectedness might  
20 afford people with chronic pain more social contact and accessibility than is possible face-to-  
21 face, as it does not require physical mobility. However, we also need to ensure that the use of  
22 social platforms is beneficial, and do not increase risk (e.g., due to the exposure to poor  
23 quality health information that reinforces disability or propagating unproven and potentially  
24 harmful approaches) [27]. Even so, the pandemic has provided an opportunity to understand

1 how social media might be better utilised as a tool to develop a sense of community and  
2 reduce isolation.

3 Online technology can be utilised to facilitate the delivery of healthcare interventions,  
4 under the guidance of healthcare professionals. For example, cognitive behavioural therapies  
5 for loneliness delivered online can decrease loneliness and improve mental wellbeing [45;  
6 46]. Online pain management programs seem to hold promise [29], particularly when patients  
7 have contact with healthcare providers, albeit remotely [54]. Online resources can  
8 disseminate pain education, and online training programs on pain self-management can be  
9 developed for health-care professionals, those with pain and their close others [30; 41; 84].  
10 However, these novel digital interventions might not be accessible for all and may even put  
11 up new barriers to those who require them the most (e.g., socially disconnected individuals  
12 with limited digital literacy).

13 We also need to think beyond technology. The COVID-19 pandemic served to  
14 highlight the upstream social determinants of health, many of affect chronic pain directly.  
15 Historical social inequalities and unequal access to resources shape individual-level risk  
16 factors, which in turn produce and perpetuate health disparities [53]. These structural  
17 problems require structural solutions [51; 93] with the aim to improve population health, for  
18 instance by bolstering social welfare systems, public health funding and improved global  
19 cooperation [68; 87; 94]. At the local level, online technologies could mitigate the social  
20 threat of existing social inequalities and injustices, providing access to relatively inexpensive,  
21 location-independent treatment and social connection. Coupled with systemic interventions  
22 such as increased government funding to telehealth services, reducing the costs and barriers  
23 to internet access, and making computers and mobile devices available to those who  
24 otherwise might not have access to them can further reduce these disparities [97].

25

1 **4. Conclusions and future directions**

2           The current pandemic has exacerbated existing sources of social threat for people with  
3 chronic pain. To prevent a population level increase in the severity and impact of chronic  
4 pain, it is critical to devote scientific attention to the assessment, mitigation and prevention of  
5 sources of social threat for people with chronic pain. Table 1 outlines several high-impact  
6 areas for research to this end. Crucially, COVID-19 should not only be regarded as a  
7 challenge but also as a unique opportunity for researchers and clinicians to develop new ways  
8 to deliver social support and pain management, as well as understand the impact of social  
9 adjustment among individuals with chronic pain.

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11

--- INSERT TABLE 1 ---

1 **Conflict of interest statement.**

2           The authors have no conflict of interest to report. K. Karos is a postdoctoral  
3 researcher supported by the Research Foundation, Flanders, Belgium (grant 1244820N). F. P.  
4 Kapos is a PhD candidate who is supported by the Patrick-Beresford Fellowship in Social  
5 Epidemiology and the P.E.O. International Peace Scholarship. H. Devan is a Postdoctoral  
6 Fellow supported by the Centre for Health, Activity and Rehabilitation Research (CHARR)  
7 Postdoctoral Fellowship at the School of Physiotherapy, University of Otago, New Zealand.  
8 This review was an initiative of the Social Aspects in Pain Special Interest Group (SocSIG)  
9 of the International Association of Pain (IASP).

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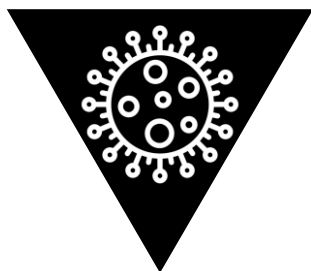


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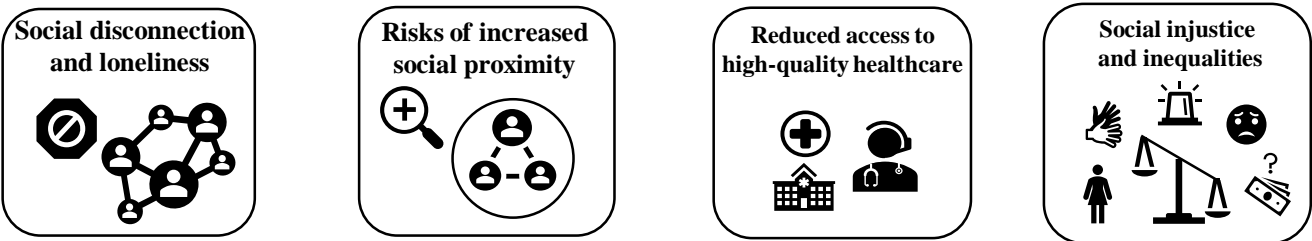
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A

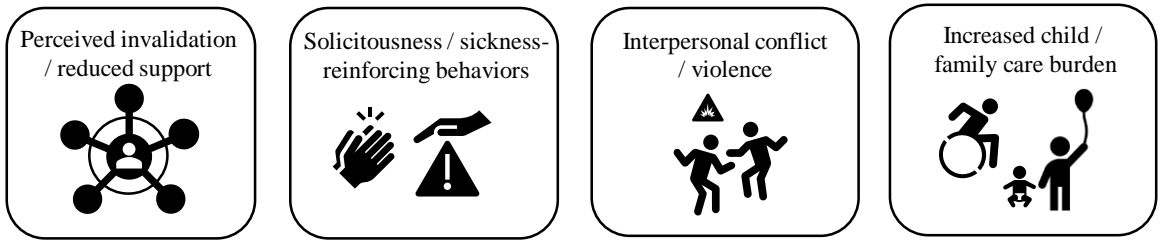


### COVID-19 pandemic

B



C

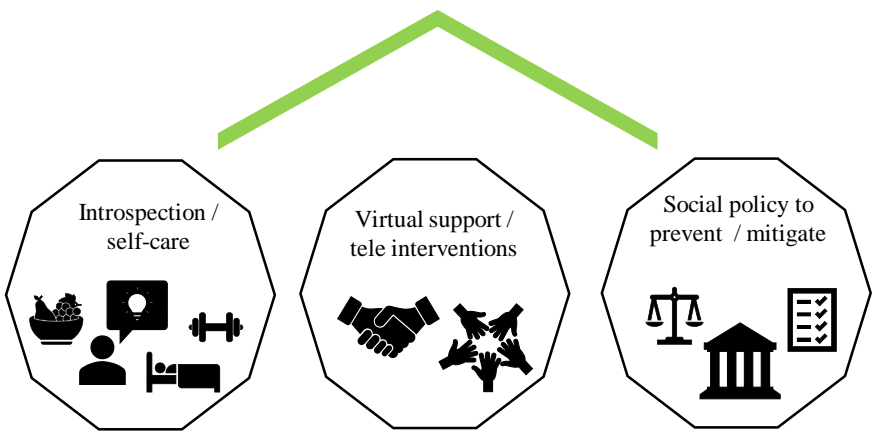


D

### Cause, Maintenance and Exacerbation of Chronic Pain



E



**Figure 1.** Schematic representation of how the COVID-19 pandemic (A) exacerbates existing levels of social threat (B), thereby inducing several social challenges (C) for people with chronic pain, and ultimately increasing the risk for the development, maintenance, and exacerbation of chronic pain complaints (D). Possible protecting processes and interventions countering the effects of the pandemic are portrayed as well (E).

**Table 1.**

*Priorities for Research on Social Factors Resulting From the COVID-19 Pandemic*

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1. Demographic and longitudinal studies on the social consequences of the pandemic for people with chronic pain.
  - a. Assess nature and cohesion of family and wider social support networks and emotional connectedness of people with chronic pain during physical distancing.
  - b. Assess how minority and marginalised groups with chronic pain are accessing pain support during the pandemic, identifying possible facilitators and barriers.
  - c. Assess different forms of social threat for people with chronic pain such as loneliness, experiences of injustice, victimization, and invalidation.
  - d. Examine the effects of social distancing measures in the workplace, and on job prospects after the COVID-19 pandemic for employees with chronic pain
2. Fundamental research on biological, psychological, and/or social working mechanisms on the bidirectional relationship between social factors and pain.
  - a. Assess the immediate and long-term effects of physical distancing on relevant pain outcomes and pain management strategies.
  - b. Investigate whether pain-related stigma, discrimination, social isolation, or perceptions of injustice increase vulnerability to COVID-19 infection or affect risk-related behaviour.
  - c. Investigate the role of social learning in times of uncertainty and the effect on pain behaviour.
3. Clinical and fundamental research on digital social support for chronic pain.
  - a. Study the similarities and differences in digital social support and face-to-face social support on pain outcomes.
  - b. Conduct theory-based studies on mediators that influence the effectiveness of online social support for chronic pain complaints.
4. Clinical research on the effectiveness of digital pain management interventions for chronic pain.

- a. Clinical trials comparing the effectiveness of digital vs. face-to-face interventions.
    - b. Research on the quality of social relationships, communication and trust between professionals delivering online interventions and chronic pain patients.
    - c. Identify barriers and facilitators for access to online treatments, especially for marginalized populations with chronic pain.
  5. Research into possible individual resilience mechanisms (e.g., increased social cohesions, reevaluation of values and priorities) buffering against the effects of the pandemic on chronic pain.
  6. Systemic research on the effects of multilevel social determinants of health on chronic pain and policies to address them (e.g., labour relations, income inequality, neighbourhood deprivation, racism, sexism, ageism, access to healthcare, etc.), to strengthen population resilience to the impact of heightened social threats on chronic pain.
-