

Osteoarthritis, COVID-19 Social Isolation- Impacts, and Counter Solutions

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Abstract

Background to the Issue: Many older adults, including those already suffering from chronically painful disabling osteoarthritis of one or more joints remain more susceptible than healthy age and gender matched adults to the COVID-19 corona virus.

Aims: This report sought to examine what has been published in 2020 on this health condition from the perspective of the variable of widely imposed social isolation strategies designed to mitigate the spread of this highly infectious disease, and to especially keep older community dwelling adults 'safe' from infection.

Methods: Reviewed were all articles published in 2020 in PUBMED from January 1-December 24, 2020 on osteoarthritis and COVID-19 isolation impacts, plus relevant past osteoarthritis and isolation literature among older adults. The focus was on ascertaining how social isolation and distancing strategies might impact current community-dwelling adults diagnosed with osteoarthritis and whether more should be done specifically to mitigate any potentially preventable 'socially' induced negative health impact among this group, in spite of the laudable goals of this public health strategy.

Results: Older adults with osteoarthritis living in the community who are asked to self-isolate, may incur more osteoarthritis pain and disability than would otherwise be encountered if actions taken to counter this possibility are not forthcoming. Advocated over and above basic care approaches are several psychosocial strategies including the role of mobilizing various forms of social support.

Conclusion: Data indicate a need for concerted thoughtful and immediate attention to offset isolation, fear, and anxiety and depression effects as part of a carefully devised integrated plan of management to reduce excess osteoarthritis disability, as well as excess COVID-19 risk among otherwise free living older adults already compromised by osteoarthritis.

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Citation: Ray Marks (2020) Osteoarthritis, COVID-19 Social Isolation-Impacts, and Counter Solutions. Journal of Aging Research And Healthcare - 3(3):32-47. <https://doi.org/10.14302/issn.2474-7785.jarh-20-3682>

Keywords: Corona virus, COVID-19, infection, lockdowns, osteoarthritis, pandemic, prevention, self-isolation, social distancing, societal shutdown, social support

Running title: COVID-19. Osteoarthritis, and Social Isolation

Received: Dec 28, 2020

Accepted: Dec 28, 2020

Published: Dec 30, 2020

Background

A growing body of data is revealing that elderly adults, especially those suffering from obesity, frailty or one or more chronic health conditions, such as osteoarthritis, are not only highly susceptible to the novel Corona virus known as COVID-19, but are commonly hospitalized at high rates due to the acquisition of acute respiratory symptoms produced in response to becoming infected by this virus [1-3]. Conversely, the ensuing pandemic and its accompanying publically recommended preventive approaches, for example, the widespread application of societal shutdowns, including the practice of advocating for self-isolation, social isolation, social distancing, and quarantine periods of varying length may yet arguably provoke, rather than diminish the risk of acquiring COVID-19 in the face of the presence of one or more prevailing comorbid health challenges known to be COVID-19 risk factors, as well as risk factors for acquiring severe disease. In particular, it seems those older adults already suffering from osteoarthritis, a widespread disabler of the neuromuscular system that prevails among elderly populations in all parts of the world would in all likelihood also be more challenged, rather than less challenged at this pandemic point in time [4] for many reasons, and again, at higher risk for disability, as well as COVID-19 disease risk. For example, prevailing isolation associated challenges that may extend to a reduced ability to self-manage the disease without adequate access to personnel, as well as closures of sites of assistance, may interact with the multitude of physiological processes underlying the disease and its oftentimes associated accompaniment of unrelenting pain to worsen this situation and to thereby provoke or intensify prevailing depression and anxiety, with dire health implications, including adverse inflammatory and immune system implications [5] as outlined by Endstrasser et al. [6], Lazzari et al [7].

At the same time, health providers, normally able to consult directly or indirectly with this group may be overwhelmed in their own right, or restricted to offering online versus in person interventions [8], but even so, are less able to help those with one or more chronic health challenges or risks as effectively as when they can be consulted as desired in an office or

face-based based environment. Those adults with osteoarthritis with visual and/or hearing impairments, hand osteoarthritis sufferers, or those with multiple joint lesions may be especially challenged in their efforts to receive needed care and information in a timely way either in the context of primary prevention or secondary and tertiary prevention efforts without extra help and assistance. As a result, the prevailing restrictions on mobility may extend to the impedance of exercise participation, while raising the challenges in maintaining a healthy weight, an immense disabling problem among many osteoarthritis cases. As well, challenges in obtaining, using, and accessing required medications, obtaining and preparing healthy foods, using masks effectively, as well as technology, and even hand washing challenges, may be raised in the face of an absence of any formal or informal support, especially if they need to unexpectedly subsume the care of younger family members not allowed back to school, while their parents work. They may feel overwhelmed as a result, as well as excessively stressed, especially if they are not be able to lift, bend, or carry, open or clean packages, food items, or medication bottles, or clean potentially contaminated surfaces without assistance. At the same time, efforts to cope with the fear of contracting COVID-19, but having no one readily available to discuss this with, may be sufficient to markedly impact sleep, an important osteoarthritis pain correlate, and one that can lower immune system competency, especially among those who already contracted this virus and are in isolation. As outlined by El-Zohby et al. [9], as with adults everywhere at this time, feelings of worry about being infected or getting sick, and helplessness even if a vaccine prevails, for example, being in a low priority vaccination category, may be additional negative Covid-19 outcomes at the present time, especially if socially supportive influences are removed or inaccessible. In addition, delays in accessing elective total replacement joint surgery, which are widespread, may not only heighten distress levels, and the inability to exercise, but functional disability and pain as well, especially among those osteoarthritis cases with multiple joint lesions, as well as one or more comorbid health conditions [12].

Indeed, as discussed by Narici et al. [8] it may

only take a few days of confinement to induce sufficient degrees of muscle loss, neuromuscular junction damage and fiber denervation, insulin resistance, decreased aerobic capacity, fat deposition and low-grade systemic inflammation that could greatly mar physical function and wellbeing. According to Lazzari et al. [7] inactivity, which rapidly depletes muscle reserves and accelerates bone turnover may also be expected to foster possible frailty, a plausible COVID-19 risk factor [10]. Inactivity is also likely to significantly worsen respiratory function, alter metabolism, and impair blood pressure regulation and brain function, while fostering depression, and possibly a persistent low grade inflammation, especially among obese cases [11]. Those who suffer excess pain as a result and must rely on opioids or other medications to quell pain [12] may also become frailer over time.

So what can be done to prevent a cascade of unanticipated noxious events and scenarios outlined above that could undoubtedly be readily encountered by the majority of older osteoarthritis socially isolated community dwellers during this current COVID-19 pandemic period. While adherence to public health and general rehabilitation recommendations appear highly recommended, can concerted efforts to mobilize both tangible supportive resources, as well as socially empathetic approaches towards administering public health approaches be of added value? That is, bearing in mind the potential negative impact of prolonged social isolation, will it be more helpful than not to many chronic osteoarthritis sufferers, especially those who are elderly, and highly vulnerable to the virus and its more severe forms [13] to be assessed carefully for possible social support needs in its various forms to compensate for their unexpected restrictive and possibly highly stressful situation?

In this regard, in accord with Kim and Su [14] who advocate applying a biopsychosocial model approach to address issues such as those highlighted above that do not appear to have been anticipated, considered, or duly acted on in urgent public health efforts to flatten the COVID-19 pandemic situation, as well as recommendations proposed by Karasavvidis et al. [15], we would like to offer an additional few thoughts that may help older adults living in the

community to maintain sufficient wellbeing and the ability to recover if they are found to be positive for the Corona virus.

Working Hypothesis

Based on the literature and the past work of the author, we hypothesize that a focus on going beyond general recommendations for osteoarthritis self-management during the COVID-19 pandemic lock-down restriction periods will prove more helpful than not for preventing excess COVID-19 infection risk, as well as excess functional disability. In particular, we would anticipate more favorable overall health results than not if routine efforts to address the nature of any social support needs by adults unexpectedly isolated socially in the community are forthcoming as outlined in Box 1:

Emotional Support = communication of empathy, love, trust, and caring

Instrumental Support = provision tangible aid and services

Informational Support = provision advice, suggestions, information to address problems

Appraisal Support = provision useful information for fostering self-evaluation, decision making

Box 1.

Modes of social support that may be applied independently or collectively to promote wellbeing among isolated elders with osteoarthritis living in the community

Rationale

According to an overview by Chu et al. [16], older adults who are found to have the highest rates of COVID-19 mortality should be isolated to protect their wellbeing, especially those with chronic conditions. At the same time, prior data and epidemiological observations, have intimated that a lack of consistent social support in various forms may have the unwanted effects of reducing immune system functioning, as well as overall life quality and longevity. Ample data clearly show that isolating older adults from others commonly increases the risk for depression, or for intensifying prevailing depression, feelings of despair and, possible cognitive decline, regardless of whether this separation is deemed health promoting and life saving [16]. In

addition, the sudden introduction of a myriad of unanticipated socially impactful pandemic oriented isolation rules, along with the associated withdrawal or closure of usual assistance or resource mechanisms is likely to seriously impact general health, plus dietary and other essential self-care behaviors along with the ability to fight infection [17]. By contrast, the presence of supportive others, either formally, or informally, or both, as well as the availability of desirable supportive strategies and resources to counter any life threatening unexpected loss of these due to social and mobility restrictions can potentially help to mitigate the tendency for older adults in isolated circumstances to adopt a more sedentary lifestyle than in former times, as well as to suffer unremitting stress [17]. Moreover, the current worldwide albeit artificially-induced withdrawal of socially supportive resources and contacts, especially mobility resources and personnel, coupled with possible exposure to poor ventilation and limited sunlight, in efforts to stem the COVID-19 pandemic, may also be expected to foster a lower sense of overall wellbeing, and thereby a possible higher infection risk if immunity is severely compromised [18-22], especially among those who are obese [23]. Given the many current socially oriented restrictions, along with the absence of numerous normally available life-affirming resources, we sought evidence to support the idea that to maintain, and hopefully to optimize the wellbeing of older osteoarthritis afflicted adults residing in the community under lock-down rulings, more programs to overcome any gap in services plus efforts to secure their emotional wellbeing are likely to reduce or limit any inevitable health related deterioration as proposed by Ammar et al. [24]. This would be especially important for those scheduled for surgery [12] where delays could lead to muscle wasting and comorbidity exacerbation, as well as an increase in osteoarthritis severity, and a decrease in life quality.

Methods and Procedures

To garner information on the topic of COVID-19 as this pertains to osteoarthritis disability, we strove to examine the PUBMED data bases for the year 2020 as well as past observations that discussed osteoarthritis pathology, and the link between health status and social support strategies and approaches. All possible articles

related to either – osteoarthritis and COVID-19 or osteoarthritis and social support, lock-down measures and older adults, as well as COVID-19 and social isolation were examined. With no actual current research on this theme, some related reports are presented in descriptive narrative format. To be included, all forms of reports were deemed valid, but published in the English language.

Results

A very dedicated search showed that very few articles on PUBMED currently discuss osteoarthritis and COVID-19 in any detailed consistent manner. In addition, the health impacts of social distancing and isolation, while attaining some interest, do not specifically speak to the elderly community dwelling adult with osteoarthritis disability. Support for social support and its favorable health affirming role have been discussed for some time, for example in the context of support groups. The relevant data in this regard are described below.

Osteoarthritis

Osteoarthritis, a painful common joint disease found among the older population [25, 26] produces immense progressive functional disability if poorly managed [27]. While self-management approaches such as exercise and non-steroidal anti-inflammatory drugs and pain medications may be helpful [27], joint surgery may still be needed to restore function and ameliorating pain. However, in the face of COVID-19 both conservative as well as surgical interventions have been severely jeopardized by social isolation rulings. To avert excess disability in this disease, the importance of exercise and diet has been stressed. The general issues possibly impacted by COVID-19 restrictions and joints that could be affected are shown in Table 1.

COVID-19

COVID-19, an acute highly contagious respiratory disease produced by a novel infective agent was uncovered approximately one year ago. Since that time, efforts to reduce its influence in all spheres of the globe have not proved as successful as anticipated, but commonly involve lock-downs, social distancing, isolation, and mobility limiting public health recommendations. While a vaccine or vaccines are being

Table 1. General sites of osteoarthritic joint disease, plus common symptoms and signs of disease.

Joints Commonly Affected By Osteoarthritis	Common Signs and Symptoms
Ankle and foot joints	Pain, anxiety, and depression*
Knee [Most commonly affected]	Stiffness
Hip	Limited mobility*
Lumbar spine	Joint instability
Thoracic spine	Joint deformity
Cervical spine, and temporomandibular joints	Inflammation*
Hand and wrist joints	Joint swelling
Elbow	Muscle weakness and wasting*
Shoulder, and sternoclavicular joints	Diminished aerobic capacity*

*=symptoms that could increase during a prolonged isolating lock-down

developed and distributed, public health measures have been seen to be increasing, rather than decreasing.

COVID-19 and Social Isolation

As outlined above, the Covid-19 pandemic, now one year since its inception and recognition as a pandemic, especially among older populations, remains a highly serious public and individual health threat. In this respect, Wiersinga et al. [27] suggest that as the pandemic proceeds, and in light of its immense impact among older already compromised adults, more, rather than fewer efforts towards basic public health measures are probably indicated. In this regard, the impact of socially restrictive and isolating effects due to COVID-19, are of concern given their potential for negatively impacting the health and wellbeing of older people in particular, including their mental, as well as their physical health as discussed by Sepúlveda-Loyola et al. [20]. To this end, although social support is not discussed overtly, the authors recommend the use of communication tools such as apps, online videos, and telehealth to help vulnerable adults to cope with their isolating situation [28].

Similarly, Mesa Vieira et al. [29] have highlighted the fact that while public health measures

such as social isolation are desirable for protecting the physical health and wellbeing of vulnerable populations, more than just resolute governmental action is required to overcome these unanticipated pandemic associated negative health impacts of these approaches.

In this regard, De Biase et al. [30] stress the urgent need to protect those who are isolated from becoming deconditioned as a result of movement restrictions, feelings of depression, and the inability to access healthcare resources for pre-existing or new non-COVID-19 illnesses. This is especially problematic at this time for people with osteoarthritis, since delivering rehabilitation in the same way as in pre-pandemic times is clearly not currently possible or practical, nor likely to meet the scale of need in the community.

Palmer et al. [31] similarly stress the importance of the long-term effect of isolation on those individuals with non-communicable diseases, such as osteoarthritis and imply that as well as short-term infection containment measures such social distancing and quarantine restrictions, efforts to combat negative effects of social isolation are indicated to prevent unhealthy lifestyles, such as excess sitting, or sedentarity, that commonly yield a multitude of highly

negative potentially irreversible long-term health impacts [18]. A recent study shows that among the adults who were already highly active before COVID-19, those above 55 years of age, those with low educational levels, and those used to exercise with friends or in a sport club, and those who were not using online tools to exercise, self-reported that they exercise less during the COVID-19 lock-downs began. Having less time, sitting more, and missing the familiar ways and competitive element of exercising were among the main reasons for the self-reported exercise reduction.

Gustavsson and Beckman [33] found that half of the older participants they surveyed did comply with public health measures and did report staying at home all the time, but at the same time up to half reported decreased mental health in terms of feeling depressed, having sleeping problems, and perceptions that isolation made them feel 'bad', an observation supported by Smith et al. [34]. Older adults in particular, may reportedly feel especially lonely and at a loss [35]. Hence, while elderly people are said to comply more readily than not with public health isolation recommendations and practices to a high degree, they might yet inadvertently and unknowingly jeopardize their prevailing health and disease status that can lead to unwanted and costly long-term negative health effects if precautions against this are not forthcoming [34]. Osteoarthritis sufferers may be at especially high risk for a variety of negative events in this regard as this group has been found to often be more socially isolated than desirable due to their disabling situation [36].

Osteoarthritis and Isolation

In terms of some specific impacts that the osteoarthritis sufferer, now forced to be homebound and alone in his/her community may suffer, are many negative health determinants such as excess feelings of helplessness, anxiety, fearfulness, depression, and an inability to cope effectively with their pain and its disabling effects [35-39]. In turn, alone or in combination, the presence of depression, anxiety and a limited ability to cope effectively due to overwhelming demands may strongly impact the motivation and/or desire to participate in exercise, while maintaining a healthy diet, as has been widely recommended. Sleep too may also be impacted in a negative way, as may

Vitamin D and sunlight exposure, potentially increasing, rather than decreasing possible infection risk, along with impaired muscle function [40] unless some steps are taken to offset the possible negative implications of prolonged social isolation in this older population [39].

In their study of social isolation, loneliness and physical performance outcomes among older-adults, Philip et al. [41] found isolation and loneliness was indeed related to various aspects of health, including poorer physical performance over time. In addition, according to Janati Idrissi et al. [42] the COVID-19 lock-downs are associated with several stressful factors that can negatively affect peoples' sleep quality and mental health including anxiety, and depressive symptoms. Even more importantly is the observation by Xiao et al. [43] as regards a negative role for social isolation, social distancing and mask wearing by providers and family, as this can not only jeopardize the quality and availability of required supportive communications, resources and personnel, but can indirectly impact immunity potentially adversely, as well as all cause mortality and functional disability, even though designed to protect the individual [14, 44].

Possible Counter Solutions

In light of the potential for an extremely negative impact of prolonged social isolation on the health status of the older community dwelling adult with osteoarthritis of one or more joints, as suggested by the data, it appears plausible to propose that some immediate thought be applied to the application of counter strategies known to have beneficial health promoting effects. That is, minimizing the potentially adverse influences of social separation and its possible adverse impact on emotional, as well as physical health, as well as on possible prior coping and self-management strategies, a focus on the provision of social support in its various forms may prove useful.

In this regard, socially supportive approaches that may be especially helpful include making arrangements for vulnerable community dwelling elders who live alone or live with another impaired adult or family member, to receive formal, as well as informal care. As well, strategies to empower vulnerable adults with painful osteoarthritis who want to retain their

independence to follow their prescribed health plans, as well as providing them with information and feedback as needed, and if desirable, while encouraging them to join and participate in online support groups are recommended [45].

In particular, on line groups where individuals can share experiences and receive emotional, informational and social support from others with similar health challenges may be especially efficacious in helping community dwelling elders to maintain their overall wellbeing, in the face of depression and excess prolonged isolation. At the same time, regular telephone contacts from family members, as well as health-care workers, plus the provision of opportunities for the affected adults to discuss specific questions and concerns about the disease may prove of high import in mediating health status, health behaviours, and health decision making [46]. Especially effective as well may be emotionally supportive empathetic communications, efforts to listen to the affected individual, regular calls, having a supportive hotline open 24 hours a day, plus newsletters, videos, and television programs that promote the value of arthritis self-care, and importance of achieving high levels of wellbeing [28].

In addition, efforts to foster information regarding mindfulness meditation, acceptance therapy, and QiJong approaches have the potential to enable the home bound individual to minimize possible depressive symptoms, pain, inflammation, and anxiety, while heightening immunity [47-50]. Education concerning the importance of exercise, weight reduction, avoidance of negative lifestyles and the value of help seeking, or a combination of these approaches are also advocated [51]. Ali et al. [52] indicate that the provision of social support, referring to the use of feedback strategies, direct assistance, passive assistance, emotional and informational support are all factors that may be arranged to favorably influence health status in a manner that may be highly advantageous to an individual who is isolated from mainstream resources, both in the short term as well as longer term situations. Moreover, tangible support as required for feeding, washing, and hygiene as indicated or needed, and provided on an individualized basis is recommended as well.

Also favored is the possible advantage of linking the 'at risk' older adult who may be isolated from others, to join online support groups or blogs, as may a linkage to a community network of providers who can provide tangible as well as psychological support [43].

However, social support is only deemed 'useful' if the recipient perceives this to be beneficial, for example, leaving a care package at the door that the recipient can't open may prove counterproductive, as may failure to address emotional concerns or sensitive topics, using on line communications. Hence, caution is advised in looking for 'generic' solutions to counter possible isolation effects, because the form of social support provided has to be personally valued to yield possible positive health effects. Indeed, in terms of technology, research shows many older adults may not benefit uniformly from access to online groups or information because they are not familiar with this process, and even if they are, may not value the absence of physical contact provided by remote services [53]. Availability of technology and its associated ongoing costs are also important to consider, as the necessary funds to do this may not be accessible to all potential participants. Technology may also be challenging to employ uniformly if for example the individual's hands are severely disabled, sitting is very painful, and/ or vision impairments prevail. Safety and security issues should also be addressed here, given that the Internet commonly requires secure confidential information to access sites and materials, and hence assurance of privacy as well practicality, and user-friendly operations, rather than simple access, warrant careful consideration [28].

Discussion

Although little is yet known about the novel Corona virus, it appears COVID-19 is more likely to affect the older adult with multiple health challenges in a fatal manner than the healthy older person or younger person, especially if they are isolated in care homes or institutions [14]. Since many older adults are not only at risk for COVID-19, but may be suffering from long standing bouts of painful disabling osteoarthritis, along with one or more comorbid health conditions, and a proclivity to fractures, this group is likely to be at extremely high risk not only for infection, but possibly

for premature mortality in the event their support system is attenuated or withdrawn, even for a short period.

Although very few papers were found concerning osteoarthritis and COVID-19 in general, and very few discussed potential negative impacts of self-isolating imperatives on this condition, past efforts in the realm of osteoarthritis care, as well as current data in other spheres, imply that more concerted efforts to counter any potentially excess burden attributable to COVID-19 lock-downs among osteoarthritis sufferers who live alone and are elderly is strongly indicated.

Indeed, while isolation is strongly advocated currently for protecting many vulnerable older adults living in the community, this sudden move towards self-isolation and social distancing, while designed to reduce rates of transmission, and the risk of severe illness, has the potential to produce unwanted long and short term impacts on the individual, and ultimately on the health care system unless efforts are undertaken to counter this [54].

In particular, to counter the possible negative impacts of social isolation, and its widespread negative potential for impairing health status among older isolated adults, it appears an array of consciously supplied supportive and empowering strategies, especially those with some past research underpinnings would be more helpful than not [35].

To carefully assist in this process, the formal health care provider may want to survey their clients carefully to uncover if they have unmet needs. Thereafter, they may want to consider the value of a variety of accessible medical, social services, allied health services strategies and others less tangible, such as help with decision-making that may prove highly efficacious for their clients, while helping to mobilize and deliver these [see Box 2].

- Empathetic communications that reinforce favorable beliefs/expectations, discuss negative emotions
- Culturally tailored and understandable educational and informational resources
- Periodic telephone/online discussions/check-ins
- Help with banking needs

- Emails, audiotapes, newsletters, blogs, as indicated/desired
- Clear actionable plans/guidelines for reducing risky behaviors and excess pain
- Resources to aid protective behaviors, such as emergency monitors, masks, disinfectants and sanitizers [44]
- Food plans/organized nutritional support for maintaining a healthy weight [11]
- Accessible meal/medication resources/delivery as indicated
- Access to immunity enhancing foods [55, 58]
- Resources to help allay fears and distress/promote sleep health
- Resources and personnel to monitor and optimize air quality
- Information on safety issues and use of vitamin D/ other supplements
- Information on the harm of excess opioid usage

Box 2

Possible socially supportive protective factors providers can foster in efforts to improve anxiety control, stress, pain control, adherence to self-protection/management strategies, sleep hygiene, immunity, and depression among isolated older adults with osteoarthritis [32, 44, 51, 55]

In addition to these possible aforementioned tangible and intangible forms of assistance, to help older community dwelling adults with osteoarthritis and possible comorbid illnesses to maintain a viable immune system, often impaired by having to stay indoors, providers can further assist their vulnerable clients in this regard by encouraging them to carry out one or more of the strategies highlighted in Box 3, especially if these can be implemented regularly.

- Meditation-related practices [44]
- Guided imagery
- Acceptance therapy
- Participation in online support group[s]

- Use of Social Networking Sites [56]
- Adoption of a positive demeanor//benefit finding approaches [45]
- Regular mild-moderate exercises and outdoor activities as prescribed by a professional [46, 57]
- Sound nutritional practices [11, 55, 58]
- Use of appropriate joint sparing techniques
- Use of appropriate assistive devices
- Use of varied relaxation/stress reduction and optimal sleep routines
- Seek counseling help as/if required [44]

Box 3

Possible strategies community dwelling adults with osteoarthritis may benefit from during extended isolation periods

As outlined by Zhang et al. [59], even if this realm of public health is not a current priority it appears essential to consider the aforementioned ideas, without excessive delay, in order to prevent any decline in the overall health status of the individual osteoarthritis case during any isolation period and that can hasten COVID-19 vulnerability. In particular, the possible importance of exercise and psychological support to buffer stress, along with the provision of foods that enhance immunity appear of high import [22, 32, 60].

Alternately, even if this currently imposed social isolation policy is only temporary, its overall negative health ramifications should not be underestimated. In this regard, Manderson et al. [1] have strongly emphasized the pressing need to attend to and acknowledge both the short, as well as the long-term effects of COVID-19, and to do this especially in the context of offering continued care opportunities to adults living with lifelong medical conditions, including osteoarthritis, who may be asked to self-isolate.

Cisternas et al. [12] too provide further support for the need to have a greater appreciation of the downstream crisis created by delayed surgical correction for severe osteoarthritis that in their view requires aggressive consideration of nonsurgical, non-opiate supported interventions to reduce the morbidity

associated with these delays due to current restricted access rulings. In the meantime, as argued by Saltzman et al. [35], one way of reducing harmful isolation effects may be to increase one or more forms of social support, as required. Ostensibly, this would not only be important for reducing negative health effects of social isolation in general, but also osteoarthritis specific symptoms and behaviors that may be harmful both to the disease, as well as to immune functioning and well-being, such as poor dietary behaviors. Moreover, assessing and intervening to address any unmet socially oriented need during the current pandemic lock-downs, may also promote, rather than deter, the possibility of positive health outcomes for older community dwelling adults in the future even if COVID-19 rulings no longer apply [57, 61-72]. See Table 2.

Conclusion

The infection risk, plus the suffering incurred by many older adults with osteoarthritis living in the community in the context of COVID-19, is clearly immense. Especially contributing to this may be social restrictions that either eliminate or produce a lack of broad range socially supportive formal and informal strategies, personnel, and resources. In turn, the widespread confining strategies of social isolation designed to eliminate or reduce COVID-19 infection risk among older community bound osteoarthritis sufferers and others may produce unrecognized or overlooked serious health challenges that may haunt society in the future, unless attempts to mitigate this are forthcoming without delay. To minimize excess suffering during, as well as following socially restrictive lock-downs, one possible strategy of immense immediate value would be to examine and provide desirable safe personally tailored empathetic and motivational trustworthy social support strategies and resources that do not raise further fear, distress, or infection risk, but can tentatively offset the multiple mental and physical adverse effects of isolation, including lowering immunity, as needed. Specifically educating providers and policy makers in this regard would also be helpful in all likelihood, and may prove of immense value not only in the context of the present pandemic crisis period, but well beyond this time period as well. Those adults in the higher age ranges, those with multi morbidities, those

Table 2. Selected health effects of lockdowns that may harm older adults with osteoarthritis who are instructed to stay home in isolation

Authors	Possible impact
Moreno et al. [73]	Could increase the risk of mental health problems and exacerbate health inequalities
Wang et al. [74]	A prolonged home stay may be associated with potential side effects, which may jeopardize people's health and thus must be recognized and mitigated in a way without violating local ordinances Some of the most important undesirable consequences of prolonged home stays are physical inactivity, weight gain, behavioral addiction disorders, insufficient sunlight exposure and social isolation
Schippers et al. [75]	Many measures taken in lockdowns to protect life may compromise the immune system, especially of vulnerable groups This leads to the paradoxical situation of compromising the immune system and physical and mental health of many people, including those we aim to protect
Lee et al. [76]	Lock-downs produce visible increases in mental health problems and loneliness issues
Gan et al. [77]	Personal quarantine situations may increase individuals' anxiety, and fear
Beck et al. [78]	May induce or increase sleep problems
Ruiz-Risa et al. [79]	Negative diet and physical activity changes
Lopez et al. [80]	Efforts to address older adults' psychological well-being are warranted and should include a focus on mobilizing older adults' personal resources
Niedzwiedz et al. [81]	Increases psychological distress, and alcohol usage
Grossman et al. [82]	May induce sleep problems

who live alone, those who are obese or frail, and those who are awaiting elective surgery might be preferentially targeted. In acting now, socially isolated older chronically disabled adults may be expected to experience:

- A host of direct health-enhancing benefits, such as problem solving, emotional regulation.
- A decline in the negative effects of self-isolation on health due to excess stress.
- More favorable health promoting behaviors, confidence in decision-making, and outcome expectations
- Less risk of acquiring COVID-19 infection, and excess pain and functional disability.

Acknowledgments

N/A

Funding

None

Conflicts of Interest

None declared.

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