

REVIEW ARTICLE

## Long COVID-19 Multi System Complications: Can Naturopathy Help?

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### Abstract

Since December 2019, multiple subgroups of COVID-19 surviving older adults and others have been significantly affected and diagnosed as having a complex syndrome termed long or post-acute COVID-19 that is not apparently associated with their health history profile or any definitive laboratory test. This mini review primarily aimed to document some of the current clinical observations that have emerged to date. A second aim was to establish if any benefits might accrue in the case of a viable number of vulnerable older long COVID sufferers if they are exposed to one or more forms of naturopathic interventions, as needed. Using **Google Scholar**, **PUBMED**, **PubMed Central**, and **Science Direct** data bases, an extensive scan showed a sizeable percentage of older adult COVID-19 survivors are likely to suffer from multiple adverse post-acute COVID-19 health complications including respiratory, musculoskeletal, cognitive, macro and micro tissue disturbances in multiple organs plus diverse neurological manifestations even if they were vaccinated or previously healthy. There is some support that in absence of any sound mainstream rehabilitation solutions for any of these complex problems, the timely application of approaches based in the naturopathic traditions may prove helpful in multiple spheres.

**Keywords:** Long-COVID -19, Naturopathy, Older adults, Post-acute COVID Syndrome, Rehabilitation

## Background

Since December 2019 when a lethal and novel Corona virus termed COVID-19 emerged in Wuhan, China, and rapidly spread to become a pandemic of immense proportion much attention to its eradication has evolved with some degree of success. Yet, even after some success in attenuating the pandemic, the issues related to this oftentimes deadly novel largely airborne virus persist in various forms that are said to cause and perpetuate considerable physical and psychological havoc.<sup>1</sup> These include a syndrome now termed post-acute or long COVID-19 syndrome found among a fair number of COVID-19 survivors, and which can manifest for up to one year, and possibly for longer, especially among those post-acute COVID cases in the higher age ranges<sup>2</sup> and who might already be in poor health.<sup>3</sup> [See Figure 1]

As a result of one or more of the aforementioned prolonged ill health manifestations that have been observed in a fair percentage of post acute COVID survivors regardless of vaccination, and that was clearly not initially anticipated at the outset of the COVID-19 pandemic in 2019, nor for some time thereafter, many older surviving adults may be especially challenged when returning to their homes, in the absence of any formal care.

Many cases may also be overlooked as being in need if they were vaccinated and had mild acute symptoms or were fine when they returned home initially. However, those who were more severely impacted by acute COVID respiratory illness, plus those who incur delayed albeit prolonged one or multiple debilitating symptoms that include those shown in Figure 1 may be very challenged to pursue their daily routines without assistance. Indeed, in addition to the symptoms listed in Figure 1, additional concerns may include variations in: chest pain, muscle aches, muscle weakness, and a cognitive state of confusion termed 'brain fog'. These diverse manifestations are however, not presently or generally linked to any well defined laboratory indicator or recognized diagnostic test other than selected respiratory tests.<sup>5</sup> At the same time, multiple reports anticipate that the presence of one or more of these lingering symptoms is likely to have multiple adverse effects on physical, social, and leisure time function, plus mood, and sleep hygiene in those over 65 years of age who return home after an acute COVID-19 bout of illness. Moreover, and in the face of any persistent impairment of lung function, there may be an ensuing inefficiency in physical performance ability, signs of persistent immune suppression, vascular fibrosis, cardiac ailments and various psychological impairments such as anxiety disorders, panic attacks, depression, and post-traumatic stress disorders, post-COVID complications that all demand efficacious and well-established counter solutions.<sup>2,6,7</sup>

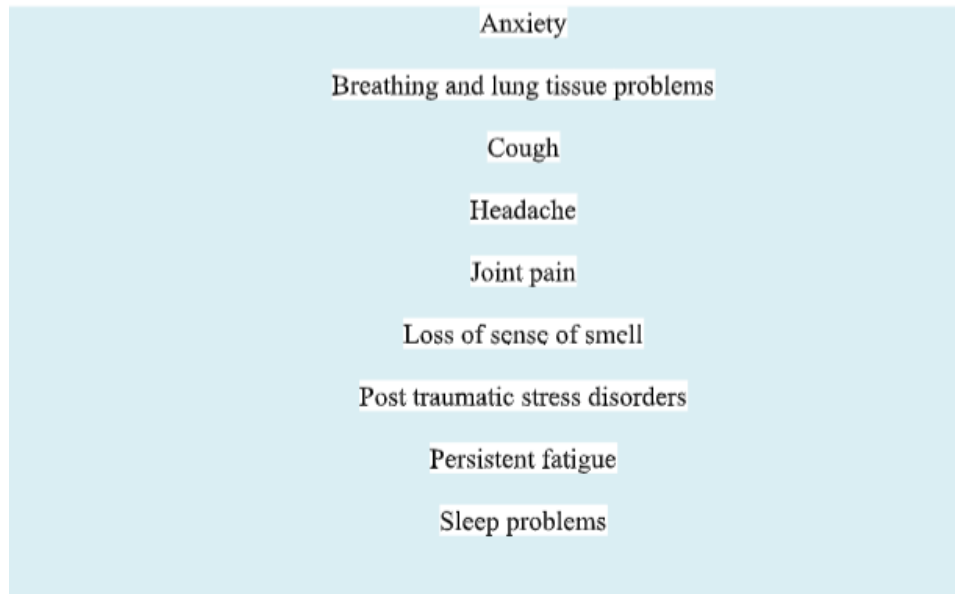
Yet, as a result of the oftentimes vague nature of the multiple overlapping diffuse multi system post-acute COVID

complications observed to date, it continues to be very challenging to conceptualize how to anticipate who will acquire one or more of these adverse states of wellbeing, and/or what should be done to effectively intervene successfully to mitigate or avert one or more of these possible long term post COVID-19 complications. As a result, the World Health Organization has suggested rehabilitation for COVID-19 patients should include adjunctive measures known to ease breathing, various exercises to build capacity and foster healing, and most importantly efforts to foster the optimal management of stress and anxiety, along with healthier life style modifications.<sup>8,9</sup> Moreover, multiple reviews regarding post-acute COVID syndrome recommend integrated holistic rehabilitation or evidence based traditional approaches that can potentially address and restore physical as well as mental health to many patients with signs of immense psychological and physically disabling distress manifestations irrespective of age and co-morbidities, from the earliest point in time and in line with other related recommendations,<sup>10-14</sup> such as Tai Chi.<sup>15</sup>

This report focuses on what is known about long COVID-19 health attributes, in the context of aging, and how naturopathic approaches practiced widely in Asia and India and to some degree in all parts of the world and grounded in the medical sciences may prove helpful.<sup>16</sup> Drawn largely from the **PUBMED** database, it is hoped the overview can provide the interested reader with a general view of current observations and trends in this regard, as well as the researcher and clinician who might find the data worthy of further consideration and study.

Although a wealth of data now clearly shows that COVID-19 infections, which may occur independently or in conjunction with one or more chronic health conditions, long COVID symptoms as these occur in the older adult population may go unnoticed and untreated. In addition to having a major impact on functional ability, the persistence of one or more aversive long-term health consequences can possibly raise the risk for second or subsequent COVID-19 infections and a higher than necessary disabling low quality of life.

These include, but are not limited to symptoms of new acute or late-onset endocrine diseases and an accompanying cortisone excess that may foster highly negative rates of clinical progression and adverse outcomes,<sup>17,18</sup> as well as the undesirable progression of one or more pre-existing clinical conditions including obesity, depression, and anxiety, musculoskeletal pain manifestations, and a consequent need for considerable direct health and social care support.<sup>19,20</sup> While the world awaits a possible uniformly efficacious COVID-19 antidote, efforts to mitigate its long term consequences and residual impacts remain strongly indicated.<sup>21</sup>



**Figure 1.** Snapshot of key symptoms as currently described by sizeable numbers of older COVID-19 survivors that might heighten existing health challenges in those 65 years or above.<sup>3-5</sup>

Indeed, given that post COVID-19 neuropsychiatric symptoms appear to last longer in the older adult than in any other sub group, and may be mediated in part by possible pre existing psychiatric and other health conditions, solutions that are carefully construed, stress free, cost effective and timely, as well as safe are imperative.<sup>22</sup>

Building on prior work in this regard, this current overview aimed to examine whether naturopathy in any form has the potential to advance the amelioration of one or more long term COVID-19 impacts, especially among those older adults confined to their homes without consistent care. Its secondary aim was to identify gaps in our understanding of the ongoing COVID-19 challenges that persist despite more than three years of research and to offer recommendations for consideration by clinicians and researchers in the field based on these findings of the potential for naturopathic medicine to reduce this global burden.

As per Steel<sup>23</sup> and Prabu<sup>24</sup> in the absence of any known effective treatment for COVID-19, the international community of health practitioners and researchers are committed to identify any interventions that may prevent, ameliorate or cure COVID-19. In this regard, it is anticipated that drawing on their extensive training and experience in the realms of pharmacognosy and clinical nutrition, naturopathic practitioners – like many traditional, complementary and integrative medicine practitioners can offer a valuable unique or adjunctive contribution to the global search

for an intervention approach that can favorably impact and improve COVID-19 outcomes for all at the individual as well as population level.

## Methodology

To obtain the data for this review, the electronic data sources **PUBMED, PubMed Central, Google Scholar** and **Science Direct**, housing a large majority of the world’s scientific and medical literature, were carefully searched. The time period searched ranged from January 1 2022- January 31, 2023. Applied were the key words, *COVID-19, long COVID syndrome, naturopathy, older adults, and post-acute COVID-19 syndrome*. All forms of study or analysis published in the English language as full length peer reviewed articles were deemed acceptable. However, because this is an emerging topic, with few clinically sound prospective analyses, with most reports being exploratory or commentary in nature, only a narrative summary of their key points is presented, regardless of approach. Those articles that were most current or published in 2022-2023 and that discussed long COVID-19 complications, among the older adult population and possible naturopathic interventions to palliate this condition were especially sought, rather than articles on children or adolescents, found to recover more ably from acute COVID-19 viral infections, or other mainstream or allied health interventions approaches. No basic laboratory studies were included or sought, and only those clinical reports alluding to naturopathy in general, rather than any specific modality or

remedy and that might prove promising for mitigating long COVID complications was sought. Excluded too were articles that did not focus specifically on long COVID-19, proposals for future study, vaccine-based studies, pharmacologic interventions, lifestyle as a COVID-19 risk factor, naturopathy and its impact on specific health conditions, and non-English based articles.

## Results

Most current articles published between January 1 2021-2023 and that discuss the long COVID-19 syndrome, that is, the observed emergence of a variety of physical, mental, and emotional health symptoms in a modest number of COVID-19 acute pneumonia respiratory survivors, currently concur that this is an unanticipated extended unpredictable condition with potentially debilitating features that reportedly lowers overall life quality, among other life affirming attributes.<sup>25</sup> Some of these reported impairments include diverse complaints of a subjective nature that include but are not limited to - shortness of breath, cognitive challenges, fatigue and depression that is not apparently related to any definitive medical or pathological test or distinct health condition.<sup>26</sup> However, a purely psychiatric explanation cannot explain its presence in many young COVID-19 survivors or children<sup>26</sup>, and older adults who are particularly affected, may also suffer long term tissue damage of vital organs, plus pathological inflammation,<sup>26</sup> and excess muscle weakness<sup>27</sup> that alone require long term attention. In addition, the older adult COVID survivor may become frail, stressed, sad, exhibit sleep disturbances that foster a state of chronic fatigue, poor exercise tolerance, and various cognitive disturbances.<sup>28</sup> There is however, no established paradigm yet for intervening to break this interacting cycle of reported adverse health events that are agreeably very challenging to address. There is also some consensus, albeit limited, that the traditional medical model may not be useful for securing a definitive clinical protocol, as yet, that can successfully and predictably abate persistent multiple long COVID complications that may have no definite pathogenic basis. Patients who have one or more of these symptoms have also voiced concern that their complaints may be dismissed, deferred, or diagnostically delayed, along with perceptions of a lack of consequent treatment options.<sup>29</sup> As such, even if these latter perceptions are not accurate, the utility of host friendly naturopathic or integrated sustainable intervention approaches has recently been discussed as offering a potentially helpful adjunctive approach that may help to ameliorate long COVID complaints, and that may be especially helpful to consider in the case of the affected long COVID older adult in the absence of any ready solution or agreed upon mainstream treatment formula or rehabilitation approach.<sup>23,30,31</sup>

Naturopathic approaches may be helpful in particular in complex chronic health situations, because even if no medical diagnosis or verification of any distress is currently evidenced<sup>32</sup> these approaches are grounded in theories that espouse the importance of carefully examining the interplay or interaction of multiple intersecting issues, and to use this information to foster healing and remove modifiable disease causes in a holistic safe manner. Until medical research offers any more tangible solution to COVID long term complication alleviation, one or more tailored naturopathic approaches may arguably help to minimize both the harm and the possible adverse impact of uniform current standard practices that could place a frail or vulnerable older adult at risk for pain and more discomfort, such as intense or fatiguing exercises or manual therapy applied chest interventions or the use of narcotic drugs. The known risk factors for post-acute COVID syndrome also indicate that cardio respiratory health that may be enhanced through naturopathy<sup>33</sup> must be deemed of high import in this regard, as may cognitive health status and sleep.<sup>34, 35</sup> Unsurprisingly, naturopathic medicine approaches remain a care associated topic that is being studied quite intently<sup>34-37</sup> and must, at a minimum, warrant attention.<sup>38,39</sup>

As well, among older adults with a COVID-19 history, the finding that respiratory rehabilitation alone had little impact on those post COVID cases experiencing depression,<sup>40</sup> has suggested that a more holistic or carefully construed multi dimensional approach that has a strong basis in an integrated physiological perspective such as naturopathy may be especially indicated in select cases.<sup>23</sup> The possible risk factors for long COVID such as a poor pre COVID mental and physical health status,<sup>41</sup> may also be ameliorated in parallel with mainstream practices through carefully construed complementary naturopathic interventions such as yoga.<sup>42,43</sup>

Naturopathic medicine is well suited to help manage weight, a very key correlate of COVID-19 long COVID manifestations, because it primarily emphasizes the possible origins of a health issue, rather than focusing on a disease associated explanatory origin and the role of lifestyle and behavior as a health determinant and mediator or moderator. As such the naturopathic provider is both able to identify any obstacles to achieving optimal health and with the patient's input can design a program conducive to augmenting their health and that can be applied to many health situations, including post-acute COVID-19 syndrome distress features. For this purpose the naturopath may draw on various treatment modalities as indicated such as hydrotherapy, pulmonary therapy, acupuncture, magneto therapy, heliotherapy, diet, fasting and massage and in accord with an emergent evidence base that does show its potential in varying spheres is to 'promote health and vitality'.<sup>2</sup> In this regard, a case study by Romayke<sup>25</sup> has

revealed that a 49-year-old patient with post-COVID admitted to a specialized clinic who received a multimodal naturopathic based form of therapy, including systemic whole-body hyperthermia, was able to significantly improve their mental state, plus their physical well-being, and mood state. In addition, Mooventahn<sup>44</sup> reported that their 43 participants who had been exposed to COVID-19 and who adopted a yoga based routine during quarantine showed this could be an effective strategy for the prevention of COVID-19, as did Kavitha<sup>45</sup> and Jerrin.<sup>1</sup>

Since there is yet no evidence-based therapy that is recommended for the treatment or mitigation of one or more long/post-COVID-19 complications, clinical researchers are urged to intensify this quest, and to especially examine the value of naturopathy as a possible complementary rehabilitation approach in this regard. An effective form of intervention for older isolated community-dwelling COVID-19 surviving 'long haulers' who are found subject to a low life quality, plus multiple psychiatric symptoms of distress, is indeed not merely an idealistic idea, but one that is urgently needed.<sup>46</sup>

Barber<sup>47</sup> who undertook a retrospective chart review of 30 consecutive patients diagnosed with mild and moderate COVID-19 who were provided multi-nutrient, herbal, and probiotic treatment in a rural, out-patient, naturopathic setting found no side effects or adverse events from treatment. Moreover, while this research may not pertain to all older adults, or those who had more severe acute respiratory distress, all patients in the Barber<sup>47</sup> study reported they experienced resolution of an array of various symptoms presumed to be associated with COVID-19 infection. It was concluded a multi-nutrient, therapeutic approach may be a safe well-tolerated approach for purposes of assisting recovery among post-acute COVID-survivors with mild to moderate illness. Moreover, this approach if applied in a timely manner in those with moderate to acute severe disease, fewer or less severe emergent symptoms may prevail.

Klocke<sup>48</sup> who conducted a long COVID patient survey about their symptoms and experiences with therapeutic approaches using a sample of 499 participants, suggested few approaches (eg, mind-body medicine, respiratory therapy) had positive effects and showed a great need for patient-centered communication (eg, more recognition of this syndrome).

Bailey<sup>49</sup> suggest there are potential benefits of hydrotherapy programs already existing which combine alternative medicine with respiratory care,

physical activity, nutritional advice, psychological support, and physiotherapy, in relaxing environments and under medical supervision that can be used for COVID recovery patients. It was suggested thermal institutions might offer individualized follow-up helping to unclog hospitals while ensuring the continuity of health care for the different clinical manifestations of COVID-19 in both post-acute and chronic COVID-19 patients.

To foster a naturopathic approach, a careful and thorough assessment of the individual's condition and stage of recovery as well as their resources both intrinsic as well as extrinsic and how best to promote healing and avert symptom progression and excess weakness and cognitive disturbances is strongly warranted. In addition, prioritizing goals that align with the facts, as well as the input, of the older adult, and applying any agreed upon ideas, and monitoring these accordingly appears warranted. Amending goals and fostering incremental activities that match those needed in daily life and the provision of resources is also indicated in order to avert any worsening of the sufferer's condition or prevent the emergence of more severe illness manifestations.<sup>5</sup> Strategies that may offer a menu of options to support standard naturopathic oriented approaches, include, but are not limited to evidence based:

- Botanical herbs and medicinal plants
- Breathing exercises
- Counseling
- Elimination of potentially harmful foods, stress, and environmental hazards.
- Gentle non fatiguing and graded exercises
- Hydrotherapy/adequate hydration/untainted water
- Imagery
- Lifestyle modifications
- Meditation
- Oral and nutritional supplements, including protein
- Outdoor activities
- Paced activities
- Physical modalities
- Rest and relaxation training
- Sleep education and promotion
- Sunshine or ultra violet light exposure
- Talk therapy
- Treatment co-morbid diseases



## Discussion and conclusion

After appearing quite suddenly in December 2019, and over three subsequent years of intense endeavors to mitigate COVID-19 and its variants, even more challenging is the increasing evidence that recovery from acute COVID-19 disease is often attenuated and associated with multiple system and organ symptoms of ill health that may preside for up to one year or longer after the initial infection. In addition, second or third infections are found to occur, as well as the onset of one or more chronic health conditions, along with challenges in returning to pre COVID clinical status, especially among those who were not in optimal health. There is however, an increasingly limited means of ameliorating these or other signs of long COVID-19 distress such as bone loss, muscle wasting, and pain.

In this regard, the combined problem of cognitive disturbances, muscle mass losses, swallowing problems and others are especially challenging to overcome among the older adult population. Even if they can possibly self-manage their condition, they may be too fatigued to persist with this, or fearful to weight bear if they are weak. If they are unaware of one or more possible natural healing behaviours and approaches they might take, or are not diagnosed because they feel too ill to visit the clinic for a post COVID check in, more suffering than not may well ensue. They may also experience the onset or exacerbation of one or more chronic health conditions that further impact their life quality and ability to recover optimally.

There is thus reasonable evidence that a timely coordinated effort is needed to both avert long COVID-19 syndrome, as well as mitigate this in the event an older adult develops one or more long COVID complications over time. However, other than those already suffering from one or more pre existing chronic health conditions who may receive ongoing care, how their emergent symptoms that are not related to their overall health status can be mitigated is not at all agreed upon even when acknowledged. Additionally, even if allied complementary approaches may help, these are often not reimbursable, or advocated if the primary care system does not believe in the value of adjunctive holistic approaches and their possible utility for fostering a cost effective and possibly quite effective process of self healing and wellbeing.

If providers or those in policy realms or both do not believe in multi nutrient treatment or the importance of adequate sunlight and stress control, patient-centred care, or care other than vaccination and masking, it does seem more rather than fewer older adults will suffer unduly and may never recover their pre COVID status. In addition, if the older adult COVID survivor is not technological savvy, even those recommendations offered remotely by naturopaths to the

older adult may fail to have any effect.<sup>47</sup> The further impact of the belief that the older adult's COVID symptoms are age associated or that these long COVID symptoms will disappear in due course or are of psychiatric origin and not related to any pathological measurable feature, may fail to provide for the application of those promising naturopathic principles and methods that could potentially foster improvements in health that are currently not amenable to medical approaches.

The value of naturopathic medicine may also be underestimated for mitigating long COVID complications because most current research is also limited to the exploration of existing medical records, or web surveys and may not include those who are more severely affected by long COVID, or failed to recover within a year, but were not hospitalized or followed up in any way. They may not include those who did receive naturopathic forms of intervention, especially if they improved as a result.

As such, in addition to researchers in general extending their inclusion criteria and time frames in this realm of improving long COVID understandings, perhaps naturopathic doctors and others can become more forceful in this regard by conducting their own research as well as by enacting multiple eye catching and enlightening social marketing campaigns to spread the word of their approach that appears very timely and of high possible value to the distressed long haul COVID survivor living in the community, and others. By working with mainstream providers, while conducting high end research including cost and economic benefit analyses of their efforts among older adult populations of varying degrees of health status and educational and socioeconomic status much of value may ensue for the clinician as well as the patient .

Indeed, and subject to carefully controlled studies, a comprehensive thoughtfully construed personalized naturopathic oriented treatment approach based on a comprehensive individualized patient profile and introduced early on in the older adults' COVID recovery processes can be expected to reduce both immense suffering as well as overall social costs of not doing so, as well as possible re infections and hospitalizations, and to thereby diminish suffering, while speeding up restoration, recovery, and self-healing. Shortness of breath, fatigue, and muscle weakness are very key targets to address as soon as possible in this respect, regardless of health history, as is the person's mental and emotional state.

In the interim, it is proposed that conducting more intense, timely, and inclusive research of more representative numbers and sociodemographic features of vulnerable or affected older adults with long term COVID complications, a more solid evidence base will

emerge. As such, it can be anticipated that applied insightfully, and duly implemented and followed up, an array of naturopathic options will be shown to assist long COVID sufferers to recover more rapidly and to a higher degree, and with more satisfaction than not, as well as possible improved protection against future infectious respiratory agents,<sup>29,50-52</sup> plus a reduced risk of severe acute COVID-19 and its prolonged long COVID array of complications<sup>53</sup> and that are sustainable as well as impactful if adhered to.<sup>54</sup>

Until then, in absence of any clear medically oriented clinical approach to counter long COVID-19 complications, even for otherwise healthy sufferers, based on a long history of its beneficial attributes, as well as contemporary clinical evidence in multiple spheres, it appears that the multitude of complementary interventions designed to foster natural healing and heighten wellbeing as espoused by the naturopathic practitioner should not be overlooked or dismissed by training institutes of higher learning, the western oriented mainstream medical practitioner, health policy makers, economists, or clients themselves as a powerful force for fostering health related quality of life and short and long term social and fiscal costs.

However, to overcome pervasive biases and lack of understanding about naturopathy, it appears concerted efforts by practitioners to highlight its potential more widely are duly indicated and should be strongly encouraged.

In sum, and despite multiple gaps in the literature and a sole reliance on a narrative overview of available research there is no question that a sufficient number of vulnerable older adults returning to the community or living therein who have survived one or more bouts of acute COVID-19 respiratory disease or a related variant infection may develop distressful prolonged physical as well as psychological complications that may not resolve readily.

As such, this mini topical overview argues that even though more research is needed, since the adverse health signs of many post-acute COVID-19 older adult survivors cannot be placed 'on hold' pending a sound evidence base of well designed research endeavors, naturopathic medicine, which has a long history of success in analogous spheres, may be one key that can readily be applied safely without delay to ameliorate one or more multiple symptoms of an older long COVID sufferer who has no direct living assistance and others who have persistent symptoms of distress that are not medically situated or verifiable. This does not exclude its potential for use in nursing home and long term care settings where the approach may be even more essential and well founded as well as efficacious.

Based on what we do know it can be stated with modest confidence that:

- Drug free naturopathic approaches when applied carefully and insightfully may not only impact life quality as a whole, but multiple key long COVID attributes experienced by substantive older COVID-19 survivors.
- The attributes that may be impacted most favorably include, but are not limited to: fatigue, immune system vulnerability, an excess need for narcotics to quell pain, sleep health, stress control, and deficient musculoskeletal and neuropsychiatric health status.
- Naturopathic medicine and its comprehensive clinical screening and analytic approach applied in a personalized insightful and timely manner may prevent increases in pre existing health impairments as well as the chances of second and third COVID-19 infections in vulnerable older post-acute COVID-19 survivors.
- Considerable fiscal relief in multiple spheres that should be duly explored may also be consistently evidenced.

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## Conflicts of Interest

None

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