Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Traditional and complementary treatments do have a role to play in global health, but probably not in emerging pandemics

As we enter this new decade the world is experiencing a major global health challenge – namely the emergence of a pandemic outbreak of a disease (COVID-19) caused by a novel coronavirus (SARS-CoV-2). Along with the growing threat of this infectious disease, there have been increasing reports of a variety of cures, potions and lotions that purport to effectively treat COVID-19. Many of these come from the world of TCIM, many of them based on misinformation or misunderstanding of COVID-19, and many of them potentially dangerous.

I will not link directly to the sources in this case – to avoid further fanning the flames of misinformation – but recent high profile examples have included a Canadian naturopath (unlicensed) actively claiming the existence of the coronavirus as a hoax, that viruses can't cause disease, that their treatments can boost immunity to ensure health, and, an Australian Chinese medicine clinic has been promoting an 'anti-viral drink' as, a preventive against the coronavirus. Both these instances have attracted the attention of the relevant regulatory authorities.

These are two extreme cases, and none of them are in fact representative of what the TCIM professions are doing in those countries – the World Naturopathic Federation has sent out advice to all member organisations (including the Canadian association) that naturopaths work with public health authorities to determine the best course of action if a patient wuth suspected COVID-19, and the Australian Chinese Medicine Association is co-hosting an information event with the University of Technology Sydney and led by the New South Wales Chief Health Officer and state infectious disease organisations to provide information on how primary-point-of-care practitioners should respond to the COVID-19 outbreak.

Nevertheless, the issue of some elements within TCIM communities exploiting acute outbreak events is not new. In Australia, one high-profile homeopathy practitioner has had regulatory, legislative and court action taken against them multiple times for their promotion of homeopathic medicines as the solution to everything from vaccine injury to SARS to radiation from nuclear power plant explosions [1]. But even beyond these extreme examples, there may be many cases of well-meaning TCIM practitioners who want to assist patients in need in times of a crisis such as that posed by the current COVID-19 pandemic. However, the role of TCIM may be relatively limited, attempts to assist may actually cause harm, and efforts of the TCIM community may be better spent working with the public health community in their endeavours.

Integrative medicine purports to be 'the best of both worlds' – drawing from the expertise and experience of both biomedical and traditional approaches to healthcare to provide the best outcomes for patients [2]. This is a laudable goal and one that – in my opinion – does represent the best for patients. But such an approach also requires humility and self-reflection in practise, and acknowledgement that sometimes a favoured therapy or approach may not be the best one, and that referral or deference to 'the other side' may be the best option. COVID-19 is likely one of those instances for TCIM practitioners.

This is not to say that TCIM may not have a role in infectious disease treatment. Current evidence suggests TCIM is being used to manage and treat malaria, tuberculosis and HIV/AIDS – though importantly these are usually integrated as part of a suite of best-practice care and are usually focused on chronic, ongoing post-infection symptoms [3–6]. Alongside growing evidence of use, antiviral activity of TCIM products against dengue [7] and chikungunya [8] has been reported, and preclinical reports or phase one clinical trials suggest some TCIM may be effective in treating these viral infections [9–11].

Concomitant use of TCIM with conventional therapies have been reported in certain emerging infectious disease outbreaks such as SARS [12,13], pandemic influenza [14,15] and Zika virus infection [16], though these were of variable – sometimes unknown – effectiveness. Where the risks of treatment are not significant and more about the disease is known, such concomitant use may not be an issue. Although it wasn't useful during the infectious stage, TCIM does appear to be helpful – based on self-report – for patients with post-infectious sequelae in conditions such as chikungunya [17] and Ebola [18]. These represent promising areas for examination in post-infectious management and recovery, but they do not provide evidence of a role of TCIM in the acute stages of infectious disease outbreaks.

Without full knowledge of the infectious agent, even well-meaning (but inappropriate) application of TCIM can significantly worsen outcomes. For example, many of the TCIM treatments being promoted for COVID-19 currently are herbal interventions that are immune-stimulating in nature, yet hyper-stimulation of the immune system itself (cytokine storms) – was one of the mechanisms by which previous viral outbreaks have harmed even healthy victims [19]. Treatments that has a sound theoretical rationale and anecdotal effectiveness in previous coronavirus outbreaks (such as corticosteroid use in acute lung injury [20])

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have even been postulated to be potentially harmful for patients with COVID-19.

The clinical course of patients with COVID-19 remains to be fully characterised, little data are available that describe the disease pathogenesis, and no pharmacological therapies of proven efficacy yet exist. Until more is known about COVID-19 – or any infectious agent – and its actions during the early stages of an outbreak – any active treatment interventions are as likely to harm as they are to help. This is just one of the reasons national governments and the World Health Organization have generally focused their immediate attention on preventive measures.

These are not limited to major measures such as quarantine but also personal and individualised practices such as avoiding exposure or close contact to those with acute respiratory infections, frequent handwashing, avoiding contact with wild animals or dead farm animals and maintaining good cough etiquette. One of the other key common recommendations is that persons who do exhibit symptoms that align with COVID-19 do not visit medical practices or emergency rooms, but rather call these facilities to make appropriate arrangements.

However, promoting TCIM services – where those suspected of being infected with COVID-19 need to visit with a practitioner or purchase treatments from a pharmacy, health food store or other provider – risks exposure of additional people to someone with COVID-19. This is not a far-fetched scenario – one of the first major vectors identified in the Sierra Leonean Ebola outbreak in 2014–2016 were the traditional healers who promoted their services as a means to cure the disease [21]. Where the benefit:risk ratio of a treatment is sufficiently high to make such potential contact clinically useful this might be a worthwhile risk, however no treatment – TCIM or otherwise – has so far met that bar for COVID-19.

TCIM as part of an integrated approach to healthcare has much to offer global health and the public health movement. However, no therapy is a panacea and no therapy – biomedical or TCIM – should be construed as such. There are always going to be some areas where treatments are useful, and other areas where they are not. One thing that biomedicine is – and always has been – exceptionally good at is acute medicine and control of infectious agents. Many of the infections that once plagued humanity are now distant memories for many due to the successes of biomedicine. However, there are many areas – particularly around chronic and complex conditions – where conventional biomedicine performs relatively poorly. These are often the areas where TCIM is most useful. The fact that many TCIM may not be the best option for particular areas does not weaken their potential role in healthcare but advocating them for inappropriate uses does [22,23]. If we are truly to promote the 'best of both worlds' in integrative medicine, we will recognise this and recognise where TCIM may have an *appropriate* leading role and where it may not. After all, it is meant to be the best of both worlds.

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