Editorial

Complementary and alternative medicine during COVID-19 pandemic: What we have done

At the end of 2019, the coronavirus disease 2019 (COVID-19) epidemic broke out around the world. COVID-19 is an acute respiratory disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2); its most common symptoms include fever, dry cough, and fatigue [1,2]. The fast spread, high fatality rate, and continuous mutation of SARS-CoV-2 have brought huge challenges to public health and the global economy [3,4].

Complementary and alternative medicine (CAM) is any medical or health care system, practice, or product that is not considered to be part of standard medical care and focuses on promoting and maintaining the life and health of all mankind [5]. As an important approach for the prevention and treatment of SARS-CoV-2 infection, CAM has played an indelible role in the fight against the COVID-19 epidemic [6–9].

The *Journal of Integrative Medicine*, as one of the main journals that publishes CAM scholarship, has actively contributed to the worldwide management of COVID-19 epidemic. From 2020 to 2021, various communications about the use of CAM techniques to manage COVID-19 have been promptly reported. Several of these works and their important impacts are summarized below.

1. Screening potential anti-COVID-19 substances through *in silico* pharmacology

At the beginning of the COVID-19 epidemic, the rapid identification of effective treatment options was one of the principal approaches to slow or stop the global spread of the virus. At that time, several studies focused on screening potential anti-COVID-19 substances via bioinformatics analysis.

As early as February 14, 2020, the *Journal of Integrative Medicine* reported an innovative discovery made by Zhang et al. [10], which pinpointed 26 Chinese herbs with potential inhibitory effects against SARS-CoV-2. Several of these herbs are contained in the Qingfei Paidu decoction, which is of the key formulas that has been both confirmed by The National Health Commission of the People's Republic of China and verified to be effective against COVID-19 [11,12]. Later, the *Journal of Integrative Medicine* published a study by Zhang et al. [13] that used network pharmacology to examine the mechanism of Lung-toxin Dispelling Formula No. 1, another formula used to treat COVID-19 effectively. Further, Fuzimoto [14] used a literature review to analyze the effectiveness of the Chinese herb *Artemisia annua* in the treatment of coronavirus infection noting that *A. annua* constituents can impede the SARS-CoV-2 attachment, membrane fusion, and internalization into the host cells, as well as hinder the viral replication and transcription process. Because of these activities, Fuzimoto proposed that *A. annua* was a potential source of medicine for treating COVID-19.

2. Summarizing clinical patterns of COVID-19 to support therapeutic schedules

Before the successful development of a COVID-19 vaccine, symptomatic treatment was an important way to control the COVID-19 epidemic. At that time, it was particularly important to summarize the clinical characteristics of COVID-19 in order to identify and optimize an effective therapeutic schedule.

In the early months of 2020, as China rapidly gained control over its COVID-19 epidemic, the *Journal of Integrative Medicine* published a number of descriptive studies based on clinical experience in treating Chinese patients with COVID-19. For example, Wang et al. [15] summarized the etiology, pathogenesis, treatment measures, and clinical attentions from the perspective of traditional Chinese medicine. Dang et al. [16] described the clinical characteristics of COVID-19 in patients over 80 years of age, including high mortality rate, severe and nontypical symptoms, and lymphopenia; based on these characteristics, the authors recommended that early diagnosis of elderly individuals with suspected COVID-19 was extremely important and should rely on prompt application of viral nucleic acid tests.

3. Using clinical data to verify the effectiveness of CAM treatments for COVID-19

As time went by, more and more COVID-19 patients successfully recovered from the disease. Simultaneously, the effectiveness of CAM in the treatment of COVID-19 was gradually verified.

On May 15, 2020, the *Lancet* published an article titled *Use of Herbal Drugs to Treat COVID-19 Should be with Caution* [17]. Soon, Fields [18] commented on this *Lancet* article in the *Journal of Integrative Medicine*. He claimed "While this is true of all drugs, herbal and otherwise, the data may be biased and deserve a scientific response. We believe these types of reports will unfairly and negatively impact the field of integrative medicine as a whole and must be answered with facts and statistics that more accurately represent the current situation." Further, a meta-analysis conducted by Fan et al. [19] revealed that Chinese herbal medicine could improve the symptoms and signs of COVID-19 patients, reduce the level of inflammation marker C-reactive protein, and

accelerate the absorption of lung infections, which proved that Chinese medicine was an effective CAM treatment for COVID-19.

Besides, several studies published in the *Journal of Integrative Medicine* reported that traditional Chinese medicine was a good adjuvant treatment for COVID-19. For example, a retrospective study by Zhang et al. [20] verified that traditional Chinese medicine could help Western medicine treatments to reduce the negative conversion time of fecal nucleic acid and the duration of negative conversion of pharyngeal-fecal nucleic acid. Further, Shi et al. [21] reported similar results and clarified that the effects of traditional Chinese medicine may be related to its anti-inflammatory effects. A meta-analysis by Wang et al. [22] showed that the Lianhua Qingwen Capsule can significantly improve the effect of Western medicine in alleviating COVID-19 symptoms. Also, the consumption of Chinese herbal medicine as a co-therapy with acupuncture [23,24] was shown to be beneficial to COVID-19 treatment.

Notwithstanding, Zhao et al. [25] pointed out that the current data from randomized controlled studies of COVID-19 were imperfect, and higher-quality evidence-based studies were still needed.

4. Conducting cross-sectional surveys to optimize medical decision making

Due to the continuing prevalence of COVID-19, it is becoming increasingly important to balance the need for people to resume normal life and work with the effective control of the COVID-19 epidemic. Therefore, proper analysis of the impacts of the COVID-19 epidemic on the social- and work-lives of individuals is helpful for planning and implementing policies that help to control the spread of the COVID-19 epidemic.

The *Journal of Integrative Medicine* has published several such surveys to support medical decision making. For example, Xia et al. [26] conducted a cross-sectional web-based survey of 10,824 Chinese individuals from the general public. This survey showed that during the COVID-19 epidemic, an individual's attitude was a key factor in determining their intention to use traditional Chinese medicine. A survey of 782 Iranian residents reported by Dehgha et al. [27] revealed that about 84% of Iranians used at least one type of CAM during the COVID-19 outbreak, 57.5% used CAMs to prevent the transmission of COVID-19, and people's intention to use CAMs was associated with gender, place of residence, COVID-19 status, and source of information about CAMs.

Although CAM has proved to be a useful treatment for COVID-19 patients, it is believed that vaccination is still the only way to ultimately control the prevalence of the COVID-19 pandemic [28]. With the global promotion of COVID-19 vaccination programs, whether people who are at high risk of serious and lethal complications from COVID-19 [18,19], such as cancer patients, should be vaccinated has been widely discussed. Especially in the early days of vaccine availability, when safety and efficacy data of vaccine were incomplete for populations at-risk, the intention to receive the COVID-19 vaccine among cancer patients became an important issue. In China, Hong et al. [29] surveyed 2158 cancer patients and found that 36% had received the COVID-19 vaccine, 40% were willing to get vaccinated, and 24% refused to be vaccinated. They further found that a cancer patient's intention to receive the COVID-19 vaccine was affected by factors such as occupation, and their knowledge about and attitude towards the COVID-19 vaccine. The authors recommended that, for cancer patients, individualized vaccination plans should be developed based on case-history and patient needs.

5. The ongoing role of CAM in controlling the COVID epidemic

At present, COVID-19 is still a serious international issue. During 2020–2021, medical journals have reported various achieve-ments of CAM practitioners from all over the world. In general, the COVID-19 epidemic is gradually being brought under effective control, thanks to the joint efforts of medical faculty, traditional medicine practitioners and analysts of evidence-based medicine. Undoubtedly, CAM has made significant contributions. In China, traditional Chinese medicine integrated with conventional medicine has effectively suppressed the spread of the COVID-19 epidemic and protected the health of many people. In the world, the traditional medicine of various nations also played an indelible role.

The battle against COVID-19 continues. According to all the above accomplishments and experience, we, the CAM and conventional medicine practitioners, the vaccine and treatment developers, the healthcare administrators, medical and scientific researchers, patients and the general public, should be united to make joint efforts to end the spread of COVID-19. With the continued effort of each of these groups involved in administering and supporting CAM, the COVID-19 pandemic will be overcome soon.

References

[1] Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med 2020;382(18):1708–20.

[2] Zu ZY, Jiang MD, Xu PP, Chen W, Ni QQ, Lu GM, et al. Coronavirus disease 2019 (COVID-19): a perspective from China. Radiology 2020;296(2):E15–25.

[3] Jiang F, Deng L, Zhang L, Cai Y, Cheung CW, Xia Z. Review of the clinical characteristics of coronavirus disease 2019 (COVID-19). J Gen Intern Med 2020;35(5):1545–9.

[4] Ge H, Wang X, Yuan X, Xiao G, Wang C, Deng T, et al. The epidemiology and clinical information about COVID-19. Eur J Clin Microbiol Infect Dis 2020;39 (6):1011–9.

[5] American Cancer Society. What are complementary and integrative methods? [2021–10–18]. https://www.cancer.org/treatment/treatments-and-side-effects/complementary-and-alternative-medicine/complementary-and-alternative-methods-and-cancer/what-are-cam.html.

[6] Yang Y, Islam MS, Wang J, Li Y, Chen X. Traditional Chinese medicine in the treatment of patients infected with 2019-new coronavirus (SARS-CoV-2): a review and perspective. Int J Biol Sci 2020;16(10):1708–17.

[7] Ni L, Chen L, Huang X, Han C, Xu J, Zhang H, et al. Combating COVID-19 with integrated traditional Chinese and Western medicine in China. Acta Pharm Sin B 2020;10(7):1149–62.

[8] Luo X, Ni X, Lin J, Zhang Y, Wu L, Huang D, et al. The add-on effect of Chinese herbal medicine on COVID-19: a systematic review and meta-analysis. Phytomedicine 2021;85:153282.

[9] Ling CQ. Traditional Chinese medicine is a resource for drug discovery against 2019 novel coronavirus (SARS-CoV-2). J Integr Med 2020;18(2):87–8.

[10] Zhang DH, Wu KL, Zhang X, Deng SQ, Peng B. In silico screening of Chinese herbal medicines with the potential to directly inhibit 2019 novel coronavirus. J Integr Med 2020;18(2):152–8.

[11] Xin S, Cheng X, Zhu B, Liao X, Yang F, Song L, et al. Clinical retrospective study on the efficacy of Qingfei Paidu decoction combined with Western medicine for COVID-19 treatment. Biomed Pharmacother 2020;129:110500.

[12] Shi N, Liu B, Liang N, Ma Y, Ge Y, Yi H, et al. Association between early treatment with Qingfei Paidu decoction and favorable clinical outcomes in patients with COVID-19: a retrospective multicenter cohort study. Pharmacol Res 2020;161:105290.

[13] Zhang ZJ, Wu WY, Hou JJ, Zhang LL, Li FF, Gao L, et al. Active constituents and mechanisms of Respiratory Detox Shot, a traditional Chinese medicine prescription, for COVID-19 control and prevention: network-molecular docking-LC-MSE analysis. J Integr Med 2020;18(3):229–41.

[14] Fuzimoto AD. An overview of the anti-SARS-CoV-2 properties of Artemisia annua, its antiviral action, protein-associated mechanisms, and repurposing for COVID-19 treatment. J Integr Med 2021;19(5):375–88.

[15] Wang SX, Wang Y, Lu YB, Li JY, Song YJ, Nyamgerelt M, et al. Diagnosis and treatment of novel coronavirus pneumonia based on the theory of traditional Chinese medicine. J Integr Med 2020;18(4):275–83.

[16] Dang JZ, Zhu GY, Yang YJ, Zheng F. Clinical characteristics of coronavirus disease 2019 in patients aged 80 years and older. J Integr Med 2020;18 (5):395–400.

[17] Yang Y. Use of herbal drugs to treat COVID-19 should be with caution. Lancet 2020;395(10238):1689–90.

[18] Fields JM. Dangers of scientific bias against herbal drugs for coronavirus disease 2019. J Integr Med 2020;18(6):459–61.

[19] Fan AY, Gu S, Alemi SF, Research Group for Evidence-based Chinese Medicine. Chinese herbal medicine for COVID-19: current evidence with systematic review and meta-analysis. J Integr Med 2020;18(5):385–94.

[20] Zhang X, Xue Y, Chen X, Wu JM, Su ZJ, Sun M, et al. Effects of Tanreqing Capsule on the negative conversion time of nucleic acid in patients with COVID-19: a retrospective cohort study. J Integr Med 2021;19(1):36–41.

[21] Shi MY, Sun SQ, Zhang W, Zhang X, Xu GH, Chen X, et al. Early therapeutic interventions of traditional Chinese medicine in COVID-19 patients: a retrospective cohort study. J Integr Med 2021;19(3):226–31.

[22] Wang DC, Yu M, Xie WX, Huang LY, Wei J, Lei YH. Meta-analysis on the effect of combining Lianhua Qingwen with Western medicine to treat coronavirus disease 2019. J Integr Med 2022;20(1):26–33.

[23] Yin X, Cai SB, Tao LT, Chen LM, Zhang ZD, Xiao SH, et al. Recovery of a patient with severe COVID-19 by acupuncture and Chinese herbal medicine adjuvant to standard care. J Integr Med 2021;19(5):460–6.

[24] Zhi N, Mo Q, Yang S, Qin YX, Chen H, Wu ZG, et al. Treatment of pulmonary fibrosis in one convalescent patient with corona virus disease 2019 by oral traditional Chinese medicine decoction: a case report. J Integr Med 2021;19(2):185–90.

[25] Zhao MZ, Zhao C, Tu SS, Wei XX, Shang HC. Evaluating the methodology of studies conducted during the global COVID-19 pandemic: a systematic review of randomized controlled trials. J Integr Med 2021;19(4):317–26.

[26] Xia Y, Shi LS, Chang JH, Miao HZ, Wang D. Impact of the COVID-19 pandemic on intention to use traditional Chinese medicine: a cross-sectional study based on the theory of planned behavior. J Integr Med 2021;19(3):219–25.

[27] Dehghan M, Ghanbari A, Heidari FG, Mangalian P, Zakeri MA. Use of complementary and alternative medicine in general population during COVID-19 outbreak: a survey in Iran. J Integr Med 2022;20(1):46–53.

[28] Dai L, Gao GF. Viral targets for vaccines against COVID-19. Nat Rev Immunol 2021;21(2):73–82.

[29] Hong J, Xu XW, Yang J, Zheng J, Dai SM, Zhou J, et al. Knowledge about, attitude and acceptance towards, and predictors of intention to receive the COVID-19 vaccine among cancer patients in Eastern China: a cross-sectional survey. J Integr Med 2022;20(1):34–45.

Chang-quan Ling

School of Traditional Chinese Medicine, Naval Medical University,
Shanghai 200433, China
E-mail address: changquanling@smmu.edu.cn