



Research Supporting Naturopathic Care in the Prevention and/or Treatment of COVID-19 and in the Management of Post-COVID

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CEO WNF

October 28th, 2023

COVID-19 Pandemic

- Important to be part of the conversation:
 - Locally, nationally and globally.
 - *prevention, chronic conditions (comorbidities), general respiratory and cardiovascular care.*
- Reliance on existing research and opportunity for new research.
- The naturopathic workforce in almost every country had their practice limited in some way.



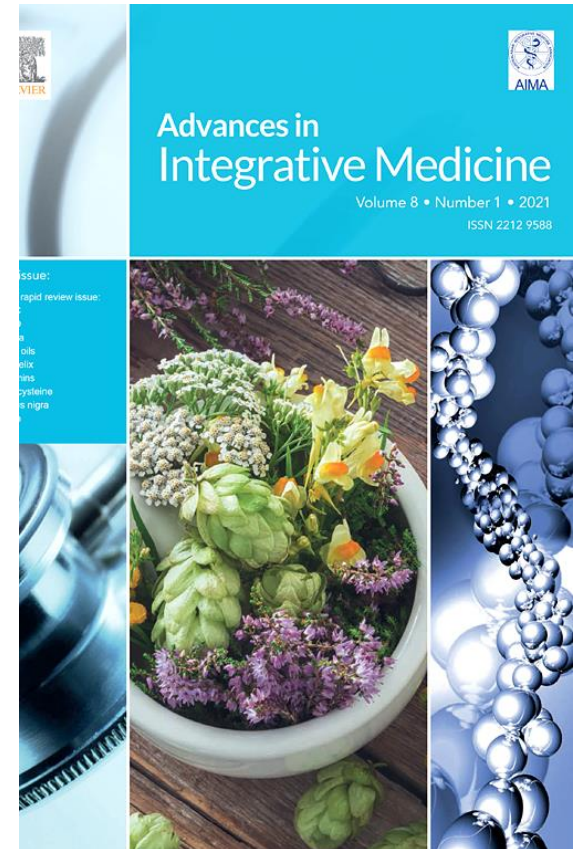
Rapid Reviews – a response to a WHO Meeting.

- WNF one of 10 non-governmental organizations (NGOs) invited to a meeting in March of 2020 to discuss role of T&CM with respect to COVID-19
- **The task force:** Over 40 contributors (researchers and naturopathic clinicians) from 16 universities in 7 countries and 5 WHO world regions
- **Selected interventions:** common treatments with traditional evidence in conditions similar to COVID-19, such as acute respiratory tract infections (ARTI) using available research evidence
- **Scope of reviews:** focused on human clinical studies examining acute viral respiratory tract infections (and complications) in adult populations



Rapid Reviews

- Efficacy and safety of **vitamin C** in the management of acute respiratory infection and disease: A rapid review
- The effects of **vitamin D** on acute viral respiratory infections: A rapid review
- The effect of ***Echinacea* spp.** on the prevention or treatment of COVID-19 and other respiratory tract infections in humans: A rapid review
- Effects of **essential oils** on symptoms and course (duration and severity) of viral respiratory infections in humans: A rapid review
- The effects of ***Hedera helix*** on viral respiratory infections in humans: A rapid review
- **Multivitamins** for acute respiratory tract infections: a rapid review
- The effects of ***N-acetyl cysteine*** on acute viral respiratory infections in humans: A rapid review
- The effects of ***Sambucus nigra*** berry on acute respiratory viral infections: A rapid review of clinical studies
- The effect of **quercetin** on the prevention or treatment of COVID-19 and other respiratory tract infections in humans: A rapid review
- **Zinc** for the prevention and treatment of SARS-CoV-2 and other acute viral respiratory infections: a rapid review



Rapid Reviews: what they revealed

- **Vitamin C:** oral Vit C may ↓ symptoms and duration of ARTI and may ↓ duration of hospital stays. No major adverse reactions.
- **Vitamin D:** evidence inconclusive for tx or ↓ duration of ARTI. Deficiency of Vit D associated with increased risk of ARTI. Supplementation when deficient may be beneficial. High margin of safety.
- **Zinc:** may reduce the risk, duration and severity of ARTI, especially if deficient in zinc or with other chronic diseases. Assessing zinc status may be valuable.
- **Quercetin:** evidence is insufficient. Exhibits immunomodulatory and antimicrobial effects

Rapid Reviews: what they revealed

- **NAC**: may improve ARTI and acute lung injuries (ALI). May improve markers of inflammation, or oxidation, systematic oxygenation, need for duration of ventilation, and may improve rate of recovery. Few mild and transient adverse events.
- **Multivitamins**: weak evidence. Suggests that supplementation not effective against ARTI tx, hospital visits or mortality, but may ↓ sx of headaches, conjunctivitis.
- **Essential oils (EO)**: may reduce sx of ARTI, sinusitis or acute bronchitis. EO studied: *Lavandula latifolia*, *Eucalyptus globulus*, *Citrus sinensis*, *Myrtus communis*, *Citrus limonum*.

Rapid Reviews: what they revealed

- *Echinacea spp*: may assist with ARTI and the common cold, especially if taken at onset. Prevention studies are lacking. Decrease in cytokine storm. Considered safe.
- *Hedera helix*: may improve the frequency and intensity of cough associated with ARTI. ↓ oropharyngeal congestion and improved inflammatory markers (ESR, CRP). ↓ in night cough, respiratory pain, and sleep. ↓ fever, fatigue, sore throat, congestion, body-aches. Decrease need for antibiotics. High safety.
- *Sambus nigra*: may reduce sx by over 50%: fever, headache, nasal congestion, especially if taken at onset of sx. High safety.

WHITE PAPER

Role of Naturopathic practice within a global pandemic

This White Paper is for policymakers and healthcare practitioners to inform them of the research and the role that naturopathic practices can have on the management of COVID-19.

Managing the current global pandemic requires utilizing all available treatments and resources both within conventional medicine and within the field of Traditional and Complementary Medicine (T&CM). Naturopathic medicine / naturopathy is an established T&CM system of medicine that is practiced in 98 countries around the world. (1) This current pandemic highlights the need to focus on lifestyle factors and to address noncommunicable diseases (NCDs), both of which are strengths of naturopathic practice.

Recognizing that there are limited treatment options and no cure for COVID-19 and building on contemporary research evidence, the global naturopathic profession undertook the task of analyzing the current research and conducting rapid reviews to assess the role of specific naturopathic recommendations which may be useful in the management of COVID-19.

The World Naturopathic Federation (WNF) represents naturopathic organizations around the world with the aim of promoting, supporting and enhancing the global naturopathic profession.

Key Messages

1. Addressing lifestyle factors and NCDs is an important step in decreasing the risk and severity of the current pandemic.
2. Most individuals choose to include complementary healthcare products and practices as part of their personal and family healthcare regimen.
3. The WNF has produced research-based rapid reviews focusing on human studies of natural products in treating acute respiratory tract infections. The results of these studies are an important consideration for COVID-19.
4. Naturopathic practice is knowledge-based and evidence-informed.



Traditional and complementary medicine (T&CM) is an important and often underestimated health resource with many applications, especially in the prevention and management of lifestyle-related chronic diseases, and in meeting the health needs of the ageing populations.



Tedros Adhanom Ghebreyesus,

Director-General, World Health Organization
Foreword from WHO Global Report on
Traditional and Complementary Medicine 2019



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WNF Commentary: Rapid Reviews

Iva Lloyd, BScH, BCPP, ND and **Amie Steel**, ND, PhD

At the time of writing this commentary, knowledge on the pathogenesis of SARS-CoV-2 and how to effectively treat it is lacking. The role of naturopathic treatment approaches or those from the realm of Traditional and Complementary Medicine (T&CM) have received limited attention with respect to their potential role in this pandemic.

Based on contemporary research evidence, traditional knowledge and the extensive training and experience of naturopathic doctors (NDs) in pharmacognosy, herbal medicine and clinical nutrition there is reason to believe that naturopathic approaches warrant consideration among the span of possible aids to the global response to COVID-19. Hence, the naturopathic profession undertook the task of conducting rapid reviews to assess the role of specific recommendations in the prevention or treatment of upper respiratory tract infections (URTIs) inclusive of, but not limited to, COVID-19. The focus of all rapid reviews was limited to human studies specific to URTIs either as original research or systematic reviews.

With the support of nine naturopathic educational institutions which included a team of over 40 naturopathic researchers, practitioners and content experts from seven countries and five WHO world regions, in two short months the profession has produced ten rapid reviews related to the role of natural health products in treating acute respiratory tract infections, with a further two reviews in draft. These rapid reviews will be published individually and as a dedicated issue of the scientific journal *Advances in Integrative Medicine* (Elsevier publication). They will be made open-access – meaning they will be free for download. The Task Force was chaired by WNF President Dr Iva Lloyd

UPDATE

EDITORIAL

COMMENTARY

CASE REVIEW

One Year Live Review – NHPs for the Prevention / Treatment of COVID-19.

- Live Review of NHPs that have been researched with respect to COVID-19. (prevention, treatment, long-COVID)
- Hosted on WNF website: May 2022 – May 2023
- Updated monthly. 1 year commitment
- Joint project between WNF and CCNM
- Allows the naturopathic profession to have a significant voice in the conversation of NHPs and the pandemic.
- Opportunity for naturopathic research!





Live Review of Natural Health Products (NHPs) Researched with Respect to the COVID Pandemic

The goal of this living map of evidence is to act as a resource, attesting to the abundance and nature of the published peer-reviewed evidence being synthesized on natural health products (NHPs) for application to COVID in the form of research reports that have used a systematic (and reproducible) strategy. This live review will be divided by the prevention of COVID, the treatment of COVID and post-COVID syndrome. It will be updated at the end of each month.



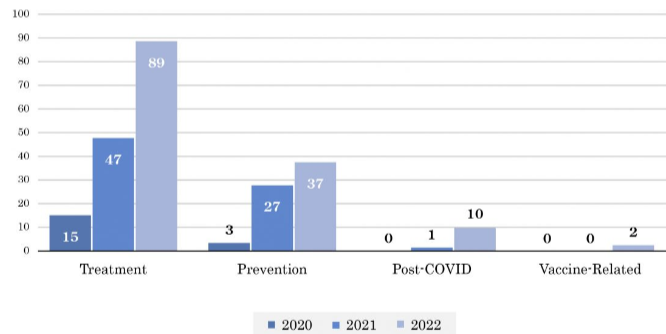
World Naturopathic Federation website:
Living Review of NHPs in COVID



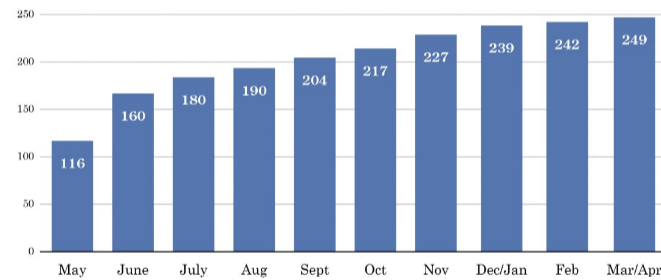
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NHP Research for COVID Pandemic by Year



Number of Systematic Reviews by Month

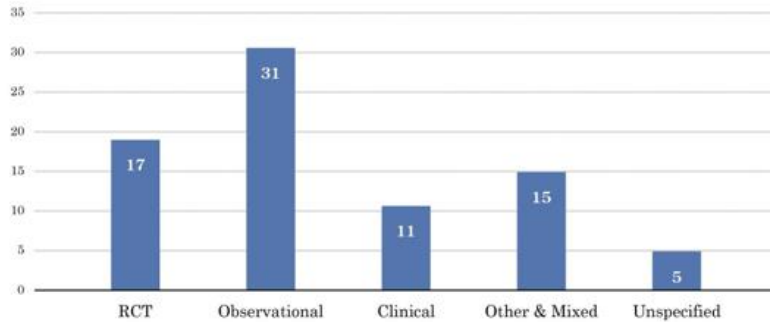


Statistical Overview – as of April 2023

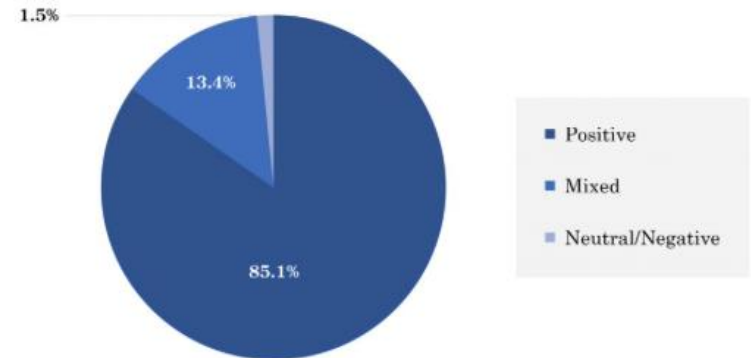
Numbers of research reports investigating the use of NHPs for the application to COVID: 249

Number of studies included in those reports: 5,811*

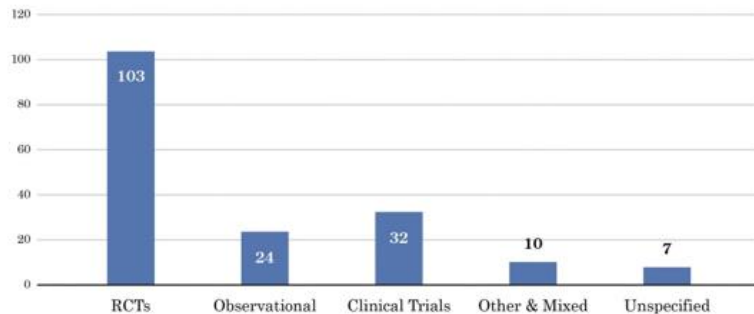
A Living Evidence Map of NHPs used for the Prevention of COVID by Study Design



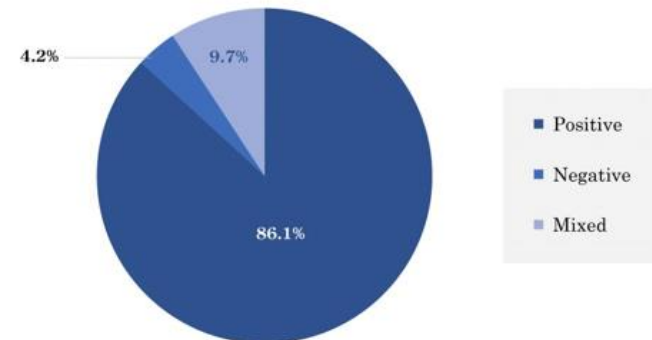
A Living Evidence Map of NHPs used for the Prevention of COVID by Outcome



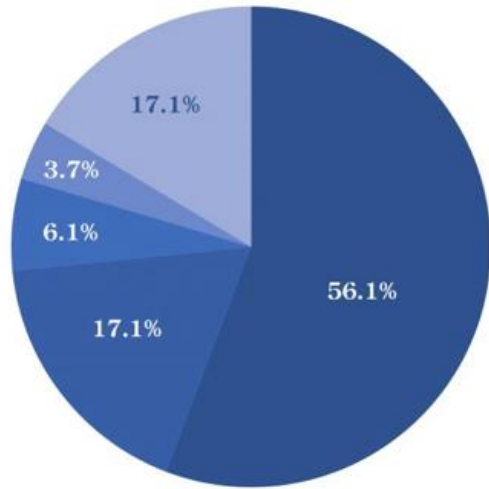
A Living Evidence Map of NHPs used for the Treatment of COVID by Study Design



A Living Evidence Map of NHPs used for the Treatment of COVID by Outcome



A Living Evidence Map of NHPs Used for the Prevention of COVID by Therapies Researched



- Vitamins
- Minerals
- Herbs
- Other Natural Health Products
- Other Therapies

Most common NHPs include:

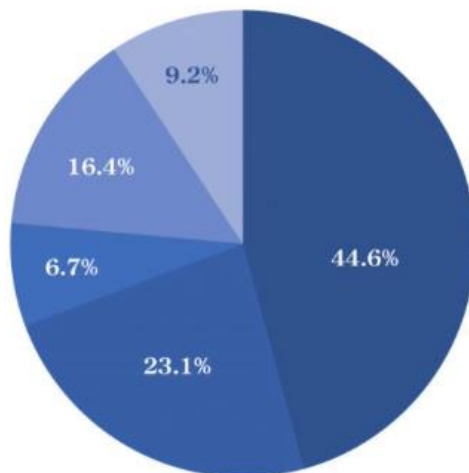
Vitamin A – 44 (28%)

Vitamin D – 44 (28%)

Zinc – 11 (7%)

Selenium – 10 (6%)

A Living Evidence Map of NHPs Used for the Treatment of COVID by NHP Researched



- Herbs
- Vitamins
- Minerals
- Other Natural Health Products
- Other Therapies

Most common NHPs include:

Patent herbal formulas: 51 (19.3%)

Vitamin D: 34 (12.9%)

Vitamin C: 25 (9.5%)

Zinc: 12 (4.5%)

Probiotics: 11 (4.2%)

Ayurveda: 9 (3.4%)

Flavonoids: 9 (3.4%)

Turmeric: 9 (3.4%)

Interim Report on the Live Review

ORIGINAL RESEARCH | NHPs in the Prevention and Treatment of COVID-19: A Live Review

CANDJ

Interim Report on a Live Review of Systematic Reviews of Natural Health Products and Natural Therapies in the Prevention and/or Treatment of COVID-19



Iva Lloyd,¹ Kieran Cooley,² and Daniella Remy³

ABSTRACT

Objective: This living review of systematic reviews investigates the types and volume of research pertaining to natural health products and therapies as they relate to the prevention and/or treatment of COVID-19 and post-COVID syndrome.

Methods: A monthly search for published peer-reviewed systematic reviews of the topic was initiated May 2022 and is ongoing. Using a systematic keyword search strategy with clear inclusion and exclusion criteria, a summary of the types of studies included, the overall outcome and treatment focus were assessed.

Results: A total of 225 systematic reviews encompassing 5,636 studies of randomized controlled trials (49.8%, $n=112$), observational studies (21.3%, $n=48$), clinical studies (20.4%, $n=46$), and other studies (12%, $n=27$) were included. Of those, 28.9% ($n=65$) of the systematic reviews focused on prevention, 67.6% ($n=152$) on treatment, and 3.1% ($n=8$) on post-COVID. The natural health products reviewed included herbal medicine, vitamins, minerals, other natural health products, and other therapies, with 83.5% ($n=188$) of all systematic reviews stating a positive outcome and beneficial potential of the natural treatment or therapy investigated.

Conclusion: This living systematic review concludes that there is a growing interest in research pertaining to natural health products and therapies with respect to the prevention of COVID-19 infections and addressing disease severity and mortality, especially in adjunct to conventional medical intervention. Nonetheless, there is a lack of high-quality evidence and consistency in outcome reporting across the large breadth of natural treatment and management options.



WNF Umbrella Review

- Extension of the 2022-2023 WNF/CCNM Live Review
- 6 papers: herbal medicine, vitamins, minerals, nutraceuticals, supportive therapies, nutrition
- Composed of analysis of narrative reviews and systematic reviews
- Opportunity for the naturopathic profession to be seen as critical experts in this field.
- Over 40 volunteers

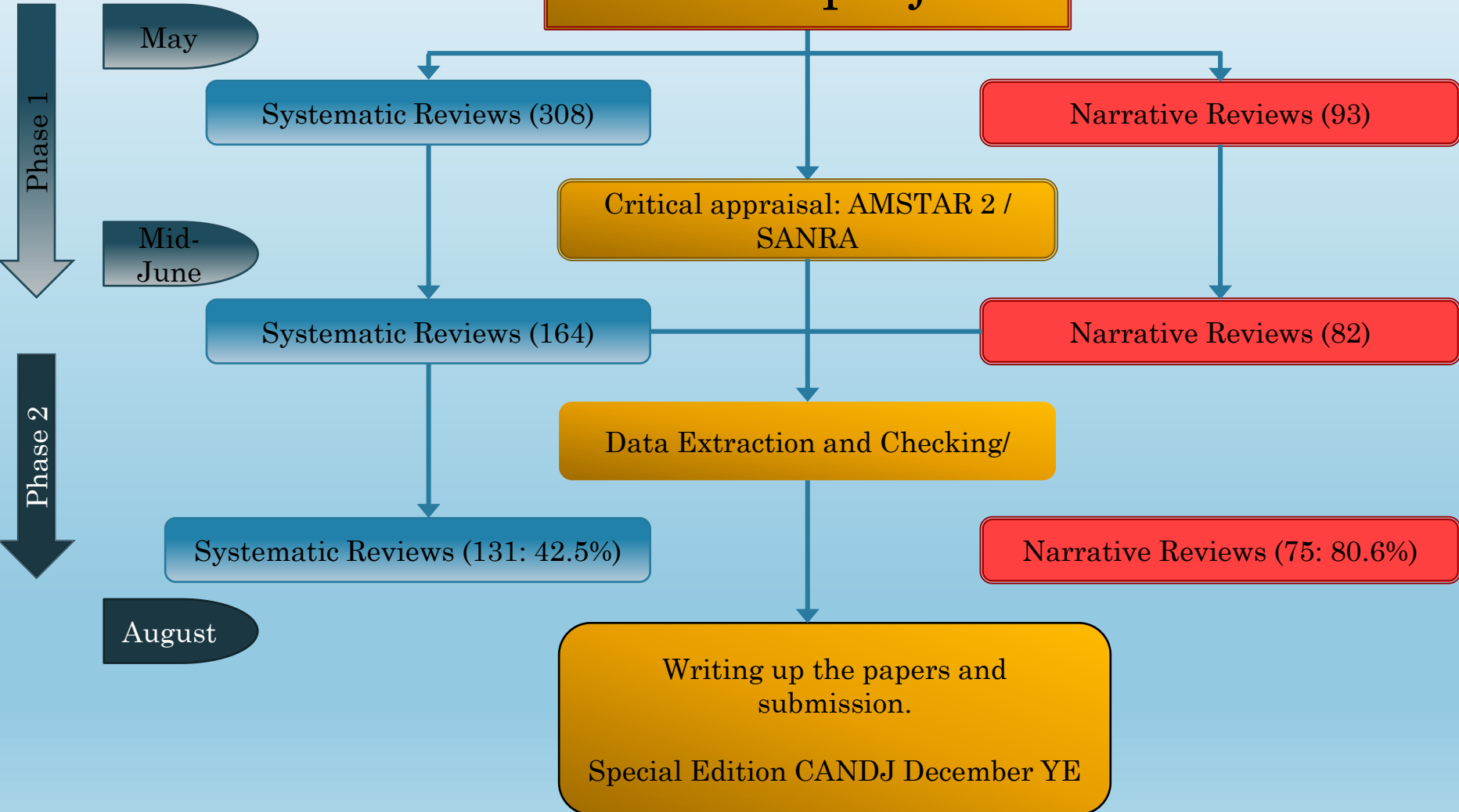


Umbrella Review Steps

1. Live Review data
2. Inclusion / Exclusion based on SANRA (narrative reviews), AMSTAR 2 (systematic review) analysis by blinded reviewers.
3. Papers assigned to one of 6 groups.
4. Data extraction phase based on strict criteria – papers omitted if they didn't fit the criteria.
5. CANDJ special edition to be published end of 2023.



WNF Umbrella Review project



Umbrella Review Highlights

- All world regions contributing (WP & SEA the highest), high degree cross-regional collaboration.
- High degree of variability in dosages and treatment protocols across all papers making conclusions challenging at times.
- Most reviews focused on treatment (compared to prevention); some emerging attention to post-COVID.
- Most systematic reviews were added to conventional medical treatment.



Umbrella Review SR Measurements

- **Rate of Recovery (ROR):** improvement in symptoms – cough, fever, headache, cardiovascular, respiratory, gastrointestinal sx, etc.
- **Rate of Conversion (ROC):** hospital duration, ventilation, ICU admissions, severe symptoms and organ failure, mortality, QoL, etc.
- **Imaging:** primarily chest CT
- **Laboratory findings:** inflammatory markers, renal, CBC, spike-protein markers, etc.
- **Quality of Evidence:** risk of bias, heterogeneity
- **Adverse Events**



Umbrella Review: Herbal Medicines

- 60+ herbs, range of therapeutic properties, significant improvement in rate of recovery, rate of conversion, imaging and labs.
- 25NR, 41SR. 706 studies. Overlap 3.8%. 102,541++ participants.
- Majority indicated some improvement in ROR (chest pain, sore throat, expectoration) and reduction in ROC (duration of hospital stay).
- Most SR indicated significant improvements in lung CT scans.
- 15SR significant improvements in laboratory measurements (viral nucleic acid levels, inflammatory markers, CRP, RT-PCR negativity).



Umbrella Review: Herbal Medicines

- *Curcuma longa*. 2NR, 5SR. Antiviral, immunomodulatory, anti-inflammatory, antioxidant, anticoagulant, antiplatelet, cytoprotective. Dosage 40mg-240mg. Duration 7 to 21 days. Various administrations. May reduce duration of hospitalization and symptomatic relief.
- *Glycyrrhiza glabra*: key herb in 7 of the TCM herbal formulations. May inhibit the growth of coronavirus, influenza A and HIV. Anti-viral actions include interference with the S-protein, inhibiting viral entry to host cells, decreasing viral replication.
- **Other key herbs included:** *Withania somnifera*, *Tinospora cordifolia*



Umbrella Review: Herbal Medicines

- **Ayurvedic herbs:** 4SR. Improved ROR (fever, cough, chest pain, throat, fatigue). Improved ROC (duration of hospital stay, disease progression, recovery time, mortality). Improved labs (WBC, LYM, CRP, IL-6, ESR).
- **Traditional Chinese Herbal Patents.** 32SR. Better recovery rates, reductions in recovery time, improved cure rates, improvement in lung function, inflammatory markers and other labs.
- Herbal medicine's inhibitory impacts on viral activity, suppression of cytokine storm potential and degradation of lymphocytes. Curcumin, essential oils, naringin, pectins and flavonoids can bind directly to receptors.



Umbrella Review: Herbal Medicine

- **Herbs examined:** *Withania, Curcuma longa, Boesenbergia rotunda, Andrographis paniculata, Acorus calamus, Strobilanthes cusia, Melicope glomerata, Zingiber officinale, Blumea balsamifera, Elephantopus scaber, Psidium guajava, Zingiber ottensii, Artemisia annua, Artemisia afra, Cannabis sativa, Echinacea purpurea, Olea europaea, Piper nigrum, Punica granatum, Scutellaria baicalensis, Cephalotaxus fortune, Glycyrrhiza uralensis/glabra, Forsythia suspense, Artemisia apiacea, Tinospora cordifolia, Adhatoda vasica, Swertia chirata, Moringa oleifera, Trikatu, Cinnamomum verum, Aloe, Neem, Triphala, Cloves, Tobacco, Momordica charantia, Cannabis sativa, Citrus spp. Nigella sativa, Chamellia sinensis, Cniduscolus aconitifolius, Scutellaria baicalensis, Ginkgo biloba, Allium sativum*
- **Potentially toxic herbs if misused:** *Oleandrin, Datura, Aconitum carmichaelii, Semenarmeniaca amarum, Ephedra herba, Glycyrrhizin*
- **TCM Herbal Formulations:** 21 patent formulae



Umbrella Review: Vitamins

- 14NR, 44SR. 793 studies, Overlap 2.3%.
Participants ~ 3,500,000 (one Vit D study ~ 2M)
- **Vitamin A:** 6NR.
 - NR: Pulmonary benefits, immunomodulatory, antimicrobial, anti-inflammatory. No definitive conclusions.
- **Vitamin B:** 3NR, 1SR.
 - Regulating cell function, energy metabolism, immune function. B12 oxygen support. B9 antiviral. No definitive conclusions.



Umbrella Review: Vitamins

- **Vitamin C:** 8NR, 13SR.
 - **NR:** Antioxidant, anti-inflammatory, immunomodulatory.
 - Variability in intervention (supplementation, laboratory status, IV)
 - **ROC:** Deficiency increases risk. Supplementation may decrease severity.
 - **IV Vitamin C:** ROC results inconsistent. May result in shorter duration, improvement in oxygen status, lower systemic inflammation and all-cause mortality.



Umbrella Review: Vitamins

- **Vitamin D: NR 12, SR 28**
 - **Prevention:** Deficiency increases risk of COVID-19. Adequate levels associated with decreased risk.
 - **ROR:** Significant association between deficiency and symptom severity. Supplementation is beneficial in improving ROR.
 - **ROC:** Deficiency associated with increased hospitalization, ICU admissions need for mechanical ventilation and mortality. Supplementation is beneficial in improving ROC. Some variability in results.
 - Vitamin D deficiencies are common in the elderly
 - Similar results as RR.

Umbrella Review: Minerals

- 8NR, 12SR
- 427 studies, 606,473+ participants.
- Most minerals studies contained one or more mineral, vitamin or other nutraceutical.
- Addressing deficiencies is preventive.
- Deficiencies increase risk of infection, rate of recovery, rate of conversion.



Umbrella Review: Minerals

- **Zinc:** 7NR, 11SR.
 - Various routes of administration (sublingual, intranasal, oral, IV).
 - Antiviral, immune modulating.
 - May be preventive.
 - **ROC: *Deficiency*** associated with increased risk of infection and worse ROC (longer duration and ↑ symptom severity).
 - Olfactory function may be improved with supplementation.
 - Some mixed results.
 - Similar to RR.

Umbrella Review: Minerals

- **Selenium:** 6NR, 6SR.
 - **ROC:** Deficiency may be an indicator for increased severity, mortality and overall risk of CV-19.
 - Mixed results.
- **Copper:** 3NR.
 - Lower plasma levels present in COVID-19 cases.
 - Antimicrobial, antiviral, antioxidant, immune modulating.
 - Proposed role in prevention and treatment.

Umbrella Review: Minerals

- **Iron:** 1NR, 3SR.
 - Antimicrobial, anti-inflammatory.
 - Iron metabolism important to COVID-19 pathogenesis.
 - **ROC:** Iron deficiency, anemia and iron concentration involved in ↑ viral replication.
 - **ROC:** Exaggerated pulmonary response to hypoxic stress, inflammation, immune impairment and greater disease severity.
 - 80% of CV-19 patients had functional iron deficiency.
 - Severe COVID-19 cases associated with high ferritin levels.

Umbrella Review: Minerals

- **Magnesium:** 1NR, 1SR.
 - Role in shaping innate and adaptive immune systems, anti-inflammatory.
 - Low magnesium levels activates inflammation.
 - Deficient magnesium levels associated with worse outcomes.
 - Mixed results on supplementation.
- **Phosphorus / Calcium:**
 - **ROC:** Low levels of phosphorus and calcium associated with worse outcomes and greater risk of severe disease.
 - Normocalcemia associated with higher survival rates.
 - Mixed results on supplementation.



Umbrella Review: Nutraceuticals

- Melatonin, probiotics, propolis, PUFAs, NAC, Quercetin
- 15NR, 15SR. 306 studies, 58,888 participants.
- Nutraceuticals may have benefit in addressing the comorbidities associated with increased risk of COVID-19.
- **Melatonin:** 7 NR, 4 SR.
 - **NR:** Antioxidant, anti-inflammatory, immune modulating. May suppress the cytokine storm, neuroprotective, sleep regulation.
 - **Labs:** Change in laboratory markers (CRP, IL-1beta, TNF).
 - **ROC:** Improved (thrombosis, ICU admissions and mortality rates).
 - Improvement QOL.
 - Melatonin levels typically lower in older adults and those with decreased immunity.



Umbrella Review: Nutraceuticals

- **Probiotics:**
 - 4 NR, 4 SR.
 - Preventive action through manipulation of the gut microbiome.
 - **NR:** Antiviral and anti-inflammatory, downstream gut-lung mucosal immune responses.
 - **ROR:** Improved cough, headache, diarrhea.
 - **ROC:** Improved - ↓ duration of hospital stays, secondary infections, ICU admissions.
 - **Improved labs:** CRP, IgM, IgG, ESR, albumin, LYM, PLT, LEU, NK, IL-6, IL-10.



Umbrella Review: Nutraceuticals

- **NAC:**

- 1 NR, 3 SR.
- **NR:** Antioxidant, mucolytic, anti-inflammatory, immune modulating properties. May alleviate oxidative stress, dampens cytokine storm. Blocks NF-kappaB (precursor to glutathione and a free radical scavenger).
- **Labs:** Some indication of improved labs (IL-6, CRP, procalcitonin).
- **ROR and ROC:** Variable results.

- **Quercetin:**

- 3 NR, 2 SR.
- **NR:** Antiviral, antioxidant, hyperlipidemic properties. Inhibitor of SARS-CoV2. Antiplatelet, anticoagulant, fibrinolytic, and NO regulating effects.
- May play a role in prevention.
- **ROC:** Improved: reduction in recovery time, ↓ risk of ICU admissions, incidence of hospitalizations. No ↓ in all-cause mortality.



Umbrella Review: Nutraceuticals

- **Propolis:**
 - 0 NR, 4 SR.
 - **ROR:** Some indication of improvement: fever, dry cough, SOB, sore throat, chest pain, headache, muscular pain, diarrhea, runny nose, fatigue, nausea, vomiting
 - **ROC:** variable results: symptom severity, duration of illness / hospitalization / respiratory support.
 - May help with prevention.
- **Polyunsaturated Fatty Acids (PUFAs):**
 - 5 NR, 1 SR.
 - **NR:** Anti-inflammatory, antioxidant, immune modulating. Modulates immune system through alterations in the gut microbiome.
 - **ROC:** decreased duration, reduced risk of shock, respiratory failure. No change in ICU admissions.
 - **ROR:** Improved: decreased inflammation and gastrointestinal sx.



Umbrella Review: Movement

- Sedentary, exercise, breathing, body-based therapies.
- Face-to-face versus telemedicine.
- NR3, SR5, 112 studies,
- **Prevention:**
 - Increased risk with sedentary behaviour
 - Exercise decreases risk of COVID-19 and decreases risk of co-morbidities associated with COVID-19
- **Lockdowns**
 - Decrease in exercise and movement
 - Increase in screen time
 - Increase in mental health issues

Umbrella Review: Movement

- **Treatment / Long-COVID:**
 - Exercise and breathing exercises: Improved dyspnea, exercise capacity, lung function and fatigue in both acute and chronic COVID-10 with mild to severe symptoms.
 - Yoga (including meditation) may be more beneficial than aerobic exercise in supporting immune health.
 - Exercise, including yoga decreases inflammatory markers and oxidative stress levels.
 - Avoid exercise in acute phase of COVID-19, avoid extreme exercise for 2-3 weeks after severe COVID-19
 - Improved QoL, decrease in some mental health symptoms.
- **Telemedicine:**
 - May improve healthy lifestyle compliance
 - May be helpful in various forms of exercise – aerobic and breathing



Umbrella Review: Diet and Food

- Nutrient levels, Mediterranean diet, fiber-rich diets, time-restricting eating, antioxidant-rich foods.
- NR7, SR4. 84 studies, 362,732 participants.
- **High-fiber diets:**
 - 3 NR.
 - Improvement in gut microbiome, may help with prevention and decreasing symptoms.
- **Fresh Fruits and Vegetables:**
 - 2 NR.
 - Antioxidant properties in food may help with reducing risk of infection or severity of symptoms.
Improvement in gut health.



Umbrella Review: Diet and Food

- **Whole-food / Mediterranean diet:**
 - 3 NR. 1 SR.
 - NR: Potential benefit in improving immune health and in the prevention and treatment of COVID-19.
 - Undernutrition and lack of antioxidants linked with increased risk.
 - SR: hypocaloric, fiber-dense Mediterranean diet. 6 studies, 582 adults overweight/obese.
 - Reduction in BMI, and significant reduction in inflammatory markers.



Umbrella Review: Diet and Food

- **Time-restricted eating (Intermittent fasting):**
 - 1 NR.
 - **Labs:** May result in decreased inflammatory markers (IL-1 β , IL-6, IL-8).
 - **ROR:** May result in reduced severity of symptoms
 - **ROC:** Decreased hospitalization.
- **Malnutrition:**
 - 3 SR.
 - **ROC:** Increased risk of hospitalization, disease severity or mortality.
 - Poor nutritional status associated with increased risk of infection and worse COVID-19 outcomes.

Thank you.

- **9 Leads:** Paul Saunders, Kerrie Oaks, Daniella Remy, Randa Karson, Tristan Carter, Claudine VanderVenter, Monique Aucoin, Andrew Jackson, Melissa Murphy (4 countries, 3 WHO Regions)
- **35 Volunteers:** Titilayo Akinbodye, Rebecca Boothe, Gabrielle Covino, Monica Doherty, Jamie Friend, Jose Sala Frau, Cathrina Geldard, Belinda Gibbs, Kristan Gilbert, Sophie Gleitzman, Kim Graham, Janis Gruska, Alex Hall, Colombe Holloway, Maria Karillis, Cecile Konn, Aileen Ramonag Lane, Lauren Lee, Meagan Leslie, Dean Medina, Beth MacGregor, Michelle Mravunac, Gillian Murphy, Manuel Navarro, Carla O'Brien, Tobey-Ann Pinder, Caio Fabio Portella, Renee Purdy, Katrina Reeve, Hannah Richmond, Maria Jose Sala, Tracelee Shaw, Tina Taylor, Tiffany Turner, Ran Zheng
- **3 Coordinators:** Iva Lloyd (WNF), Kieran Cooley (CCNM), Amie Steel (ARCCIM / UTS)



Umbrella Review Value

- Provided experience and training in research project management, critical appraisal, systematic reviews and scholarly writing.
- Dissemination opportunities World Health Organization (WHO), (World Naturopathy Day (Pune, India), Swiss International Conference on Naturopathic Research (Geneva, Switzerland), Natural Health Products Research Society (Montreal, Canada), 2nd World Congress of Integrative Medicine in Health (Rome, Italy).
- Growth in high quality synthesis research in the field throughout pandemic.
- Need for additional research and focus on consistency in treatment regimens studied.



Application to Naturopathic Practice

- Focus on malnutrition assessment – calorie excess, nutrient deficient, calorie deficiency
- Lab testing
 - Vitamin D
 - Ferritin, serum copper, serum zinc
 - Changes in CBC – LYM, WBC, PLT
 - Fibrinogen, proBNP, D-Dimer (referral)
- Monitoring of co-morbidities closely – especially diabetes and cardiovascular risks
- Mental health impact of pandemic
- PCS, PVS
- “Never well since”



For Further Information



- Volunteer for WNF projects
- Become a WNF Supporter

- Conduct the WNF at info@worldnaturopathicfederation.org

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