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## **Eco Yoga Therapy for Mental Health Related to the COVID-19 Pandemic**

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Eco Yoga Therapy for Mental Health

Related to the COVID-19 Pandemic

by

Karyn Stein, PhD

A thesis presented to the

Faculty of the Department of  
Yoga Studies  
Loyola Marymount University

In partial fulfillment of the  
Requirement for the Degree  
Master of Arts in Yoga Studies

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## **I. Introduction**

Recently the magnitude of the mental health crisis due to COVID-19 has been emerging. Reports of anxiety or depression have been on the rise, with the World Health Organization (WHO) reporting a 25% increase in mental health issues globally (2022). The WHO even stated that the information they currently have on the impact of COVID-19 on the world's mental health is just the tip of the iceberg, with women and young people being the worst impacted (2022). The COVID-19 pandemic has taken a heavy physical and mental toll on individuals and communities. People have been living in a perpetual state of the unknown for over two years. Fear of the virus, sickness of oneself or family/friends and social isolation have resulted in increases in anxiety and depression. Many, who have no history of mental illness, after COVID-19, have subsequently developed mental health issues. Research has shown that COVID-19 increases the risk of developing a mental disorder (Smith et al., 2020; Tanden, 2020). This could be due to inflammation, the cytokine storm and other factors, such as the loss of loved ones or social isolation because of lock-downs and quarantine. The WHO has prompted countries to include mental health and psychosocial support as part of the COVID-19 response plans. However, the mental health responses rooted in modern science and medicine rely heavily on treating the symptoms with medications and pharmaceutical drugs that are often addictive and with side effects.

This thesis is two pronged, including a review of the relevant literature with regard to COVID-19, mental health and yoga, as well as the findings of a six-week Eco-Yoga Therapy Program for Mental Health related to COVID-19. The research calls for an emphasis on self-efficacy and holistic preventative health measures including both yoga and ecotherapy.

This case series report on three post-Covid women of different nationalities with comorbidities including high blood pressure (HBP), hypothyroidism and post-partum, who successfully completed an integrative program based on yoga and eco-therapy. The women included: Client 1 - a 42 year old teacher of American/Spanish descent living in Madrid, Spain who was one month post-partum with 2 young children (3 and 5) and 2 teenage step children who caught COVID a few days before giving birth; Client 2 – a 50 year old female Kiwi living New Zealand with 2 teenage children and breast cancer in remission, who caught COVID during the program; and Client 3 a 46 year old British female real estate agent living in Belize with her partner and two boys with hip pain and post-COVID.

The six-week online program took place in March and April 2022. I met with the women one-on-one during the first session for intakes and during the culmination of the program. For four weeks we met for group sessions, which were also recorded in case someone couldn't attend. Sessions involved a series of pranayama (breathing), asana (physical postures), dinacharya (lifestyle choices) and dhyana (meditation) techniques, along with practices tailored to each client based on their specific needs. Clients reported improvements in anxiety levels and stress management due to the practices, in particular the asana (physical postures) and pranayama (breathing practices).

With regards to findings, all of the women felt an increased ability to calm the mind well-being in nature. The aim of the program was to offer a more preventative approach to wellness and health that focuses on salutogenesis, that is our bodies innate capacity to heal, as opposed to pathogenesis, which focuses on medical solutions to the virus and treatment once sickness has manifested. Again, the emphasis was on strengthening the bodies natural immunity through yoga

and nature, which reduces inflammation and also stimulates the vagus nerve, both of which have been found to improve mental health and decrease the chances of dis-ease.

There is a gap in medical research related to an integrative approach including both yoga and ecotherapy in promoting positive mental health and well-being. While there is extensive research involving COVID-19 and yoga, few studies have looked into specific yoga practices that address mental health, such as anxiety and depression, due to COVID-19. In fact, a major weakness of yoga studies is the lack of detail regarding the methods and interventions utilized. The project proposes an integrated holistic solution to addressing the unique mental health challenges posed by COVID-19.

## II. Literature Review

The impacts of the current COVID-19 pandemic go beyond physical health to effect mental health and well-being. The aim of this thesis is to do an extensive review of the literature surrounding mental health, COVID-19 and yoga therapy. It also reviews the findings of the six-week Eco-Yoga Therapy Program for Mental Health related to COVID-19. The goal is to understand how COVID-19 can affect mental health and how yoga and nature can play an important part of healing in a holistic and salutogenesis model of health.

It is not uncommon for global events, such as a pandemic, to cause mental health issues due to uncertainty, confusion, isolation and economic loss (Pfefferbaum & North, 2020). Studies have shown that anxiety and depression due to the pandemic are a serious concern for those who have contracted the virus, as well as the general public (Wang et al., 2020; Li et al., 2020; Rajkumar, 2020). The pandemic has resulted in many people feeling severe mental stress due to

isolation, seclusion, economic issues and insecurity (Pfefferbaum & North, 2020). Such psychological stress lowers immunity (Bao et al., 2020).

## **2.1. COVID-19 & Mental Health Research**

COVID-19 has been shown to manifest with a range of symptoms affecting multiple systems, including mental health. While COVID-19 has been shown to primarily affect the respiratory system, it has also been found to affect other body systems, including the cardiovascular system. Strange effects have affected all organs in vulnerable patients, and it has been shown to cause endotheliosis, vasoconstriction, hypercoagulability, and edema. Long COVID includes at least 203 systems in 10 organ systems (Guynup, 2021). Doctors have noted that COVID-19 doesn't just affect the lungs and heart, but also the brain (Guynup, 2021). Some people diagnosed with COVID-19 have also experienced severe depression, anxiety, hallucinations, paranoia and brain fog (Guynup, 2021). Such symptoms have mirrored other neurodegenerative brain diseases, including Parkinson's, Alzheimer's and Huntington's disease (Guynup, 2021). Such conditions have been shown to influence how people think, their perceptions, how they experience the world and actually change their personality (Guynup, 2021). According to researchers, inflammation plays a key role, including the cytokine storm that triggers an out-of-control immune response, which kills brain cells and neurons (Guynup, 2021).

A study by Melville (2022) found staggeringly high rates of psychiatric symptoms after COVID-19, including post-traumatic stress disorder (PTSD). While the study included a large sample size of 800 respondents, the survey was conducted over the internet. The research found significant neurocognitive effects after COVID-19, even among those who were not hospitalized (Melville, 2022). Research has reviewed the prevalence of COVID-19 specific PTSD (Liu et al.,



2020). Out of 285 people living in and around Wuhan, one of the most impacted areas of the pandemic, 7% of participants met the criteria for PTSD. This suggests that pandemics can have traumatizing effects for some people (Liu et al., 2020). Other pandemics have shown similar correlations in terms of mental health outcomes. For example, the SARS outbreak that started in Asia in 2003 and spread to other countries also found individuals developed PTSD after the outbreaks (Mak et al., 2010; Bonanno et al., 2008; Lau et al., 2004). SARS is a respiratory virus similar to COVID-19. In one study which examined the psychological responses to the SARS outbreak among Hong Kong residents, almost half (48.4%) reported that their “mental health moderately or severely deteriorated because of the SARS epidemic” (Lau et al., 2004, p. 420). In this same study, 13.3% of men and 18% of women reported PTSD symptoms (Lau et al., 2004). Participants also reported increased family, work and financial stress, sleep problems and an increase in substance abuse, including alcohol and smoking (Lau et al., 2004).

Violence against women or gendered based violence has been linked with mental health related to the COVID-19 pandemic (Opanasenko et al., 2021). Rates of violence against women went up significantly during lockdown periods (Opanasenko et al., 2021). Women, as well as LGBTIQ+ communities in developing countries were most impacted (Opanasenko et al., 2021). The frequency of domestic violence is disproportionately higher in communities most financially impacted by COVID-19 (Opanasenko, 2021). Partners may have lost their job or be rendered unemployed due to the economic situation of the pandemic, sickness or vaccine mandates. In addition, the closure of schools and/or childcare facilities creates more stress and responsibility on parents, aggravating existing hardships and leading to negative outcomes, such as domestic violence (Opanasenko, 2021). Children are thus more likely exposed to violence, exacerbating an already fragile situation.

Interestingly, the mental health effects documented are strikingly similar to other epidemics. Those hospitalized for SARS (severe acute respiratory syndrome) and MERS (Middle East respiratory syndrome) also experienced depression, anxiety, insomnia, impaired memory and confusion (Rogers, Chesney, Oliver et al., 2020). A study analyzing 81 million electronic health records revealed that one third of COVID-19 survivors had neurologic or psychiatric conditions within six months after contracting the virus (Taquet, Geddes, Husain, Luciano, & Harrison, 2021). Long-term mental health impacts were also seen with the 1918 Spanish flu pandemic. A strong connection was found between the Spanish flu and an increase in neurological diseases. Researchers in Britain found that there was a rise in nervous system disorders in 1919 and 1920, including depression, neuropathy, meningitis and degenerative changes to nerve cells (Henry, 2010).

The WHO has also found that COVID-19 is exacerbating an already fragile mental health situation. The latest Global Burden of Disease shows that the pandemic has predominantly impacted the mental health of young people, women and those with pre-existing conditions. Young people are at a disproportional risk for suicide or self-harming behavior. Those with pre-existing conditions, such as asthma, cancer and heart disease, are also more likely to develop mental disorders.

In particular, those people who were hospitalized due to COVID-19 have an overwhelming chance of suffering PTSD (Bo et al., 2020). A study done in China on survivors of COVID-19 who were hospitalized found that the presence of PTSD was extremely high (Bo et al., 2020). A total of 714 patients were recruited from quarantine hospitals in Wuhan (Bo et al., 2020). Using a PTSD checklist, the author found that 96.2% of the patients met the cutoff score

for PTSD (Bo et al., 2020). While these findings are specific to China and may not be applicable cross culturally, the findings are significant. Similarly, with hospitalizations due to SARS, survivors also experienced long-term psychological outcomes and distress after hospitalization, and in some cases, for months or even years afterwards (Gardner & Moallerf, 2015). This rings alarm bells that the mental health effects of COVID-19 will be with us for some time to come. Bonnano et al. followed 997 survivors of SARS for six months to one and a half years after hospitalization and found that 42% of participants had low levels of psychological functioning at six months post-hospitalization with little improvement over time (2008). As discussed previously, with increased rates of anxiety, depression and other psychological disorders, such as PTSD, yoga has shown to be effective (Bussing et al., 2012).

Those who lost a loved one due to COVID also appear to be at great risk of developing mental health issues. Previous studies have shown that losing a loved one unexpectedly increases the risk of mental health disorders, including PTSD, major depression, anxiety disorders and alcohol abuse (Keyes et al., 2014). During the COVID-19 pandemic, many individuals who lost loved ones were unable to gather and grieve with funerals due to limits on gatherings and restrictions. Research has shown that funeral rituals contribute positively to bereavement (Gamino et al., 2000). Loss exists in many forms. People may have also lost their jobs, social connections, health and/or feelings of safety and security. Such loss also affects one psychology health and well-being.

It is important to devise appropriate mental health interventions for those impacted by COVID-19. Solutions in China have been widespread and have tended towards mental health crisis interventions, including online education and counseling services (Liu et al., 2020). Such

services are essential to address the acute needs of those experiencing mental health or psychological disorders, but as argued in this thesis, yoga and eco-therapy serve as an adjunct treatment, as well as a preventative measure. As with the women in this study, when someone senses that they are slipping into a depressive or anxious state, this program can assist them with the tools to ameliorate the situation and stop the disease from progressing further.

## **2.2 Salutogenesis & Holistic Health**

The aim of this study is to bring more attention to non-pharmaceutical and holistic solutions to mental health and wellness in the face of the COVID-19 pandemic. Many impacted mentally by COVID-19 often face stigma and have little support or tools beyond conventional pharmaceutical pathways. While over 90% of countries surveyed are providing additional psychosocial support to COVID-19 patients and medical personnel, many countries also emphasized that they need to further develop and strengthen mental health services (WHO, 2022).

From a non-yogic perspective, solutions to anxiety and depression often include medications and pharmaceuticals; increasing physical activity and exercise; and/or seeing a psychiatrist or mental health specialist. As such, the program takes a two-pronged approach to mental health and healing related to COVID-19, combining both yoga and nature therapy in dealing with the multidimensional effects, including mental health, of the pandemic. Yoga, as well as the role of nature in healing, take a more preventive, holistic approach to health.

The dominant medical model focuses on treatment once a condition or sickness has already manifested. The symptoms are often treated rather than the root cause. However, in

Ayurveda, there is more of an emphasis on prevention. Sickness is seen as ‘dis-ease’ or an imbalance of the doshas and exists on a continuum. Ayurveda classifies the six stages of disease, including accumulation (samcaya), aggravation (prakopa), overflow (prasara), relocation (sthana samsraya), manifestation (vyakta), and the diversification (bheda) stage. The imbalance of the doshas causes the various stages and resultant symptoms of the disease. The goal is to reestablish the balance of the doshas and obtain a more balanced sattvic state. Salutogenesis is very similar to a sense of coherence, and it is a strong sense of coherence that helps one to deal with sickness and stress (Mittlemark & Bauer, 2016). Thus, it is one’s sense of coherence that determines their position on the ease/disease continuum (Mittlemark & Bauer, 2016).

The focus of this thesis and six-week eco-yoga therapy program for mental health related to COVID-19 is on salutogenesis, that is the origins of health and wellness rather than the origins of disease and risk factors. Antonovsky has done a lot of research on this new theory or concept of salutogenesis and how it relates to a sense of coherence (1996). Antonovsky inquires whether this sense of coherence “works through attitude and behavior change, the emotional level, or perhaps, as suggested by the new field of psychoneuroimmunology, from the central nervous system to natural killer cells” (1996, pp. 16-17). This sense of coherence does suggest that salutogenesis is related to one’s global life orientation (Mittlemark & Bauer, 2016). Perceiving life as manageable and meaningful is conducive to health (Mittlemark & Bauer, 2016).

The salutogenesis orientation of health and wellness contrasts with the pathogenesis model of modern science. Salutogenesis actively promotes health rather than focusing on a specific pathology, characteristics or risk factors. Even the WHO has recognized health as more than just the absence of disease. Salutogenesis is holistic and relates to all aspects of a person, including social support and a sense of self-efficacy. An individual is not separate from their

community, and thus it's also important that individuals are supported in furthering their individual, as well as collective, health and well-being.

In relation to the six-week pilot program, the women volunteered for the study to reduce stress, enhance well-being and develop their yoga knowledge. While none of them were clinically depressed and had normal ranges of anxiety, it is interesting in that they self-identified as needing assistance in the areas of stress management and relieving symptoms of anxiety and depression. The program is meant to contribute to public health and also be preventative in nature. Key to the success of this program is that individuals are empowered to take control of their own health and self-efficacy through practices that assist with healing oneself.

Three multinational women from different parts of the world (Spain, Belize and New Zealand) participated in the program. They are of different nationalities with co-morbidities including high blood pressure (HBP), hypothyroidism and post-partum. The women self-reported high levels of stress and anxiety related to the pandemic. They successfully completed an integrative therapy based on yoga and eco-therapy. The program involved a series of pranayama (breathing), asana (physical postures), dinacharya (lifestyle choices) and dhyana (meditation) techniques, along with practices tailored to each client based on their specific needs.

The results show that the women's mood and overall well-being improved, while their stress decreased. They found that the use of pranayama, including the three-part breath, diaphragmatic breathing and nadi shodhana in particular, helped to calm the mind, while also enhancing respiratory function. They gained confidence in healing oneself through yoga and time in nature. While there is a gap in research combining the therapeutic effects of yoga and our natural environment in relation to COVID-19, modern science is beginning to understand the intricate, incredibly complex and yet fragile relationship between humans and nature.

### **2.3 Nature, Ecotherapy & Mental Health**

Ecotherapy is a sort of umbrella term that refers to practices and techniques that recognize the connection between humans and nature. With regard to eco-therapy, the health benefits of spending time in nature are well documented (Shanahan et al., 2016; Hartig et al., 2003; Hanski et al., 2012; Mitchell & Popham, 2008; Astell-Burt et al., 2014; Bratman et al, 2015). These include improvements in mental health, such as lower levels of depression (Shanahan et al., 2016; Astell-Burt et al., 2014) and reduced anxiety (Bratman, 2015), as well as physical health, including reduced blood pressure (Hartig et al, 2003), less allergies (Hanski et al., 2012) and lower mortality from cardiovascular disease (Mitchell & Popham, 2008). Research has established a strong correlation between green spaces and peoples' health, with happiness increasing in those closer to these green areas. (Bertram & Rehdanz; 2015; Fleming, 2014). Green spaces in the above-mentioned studies refers to urban areas having more trees, parks, reserves and playground. However, the connection between our mood, mental health and nature also applies to other natural environments, including forests, national parks, beaches, jungles, deserts and lakes.

In this six-week project, the effects of yoga therapy were in essence doubled or strengthened when combined with eco or nature therapy. Practices such as meditation on the sun and spending time in nature are especially suited to this population, given these activities have proven to reduce stress, anxiety and depression (Shanahan et al.,2016; Astell-Burt et al., 2014; and Bratman, 2015). Being out in nature, in particular around trees, has been shown to increase blood oxygen levels. The reverse also being true, that is where polluted environments affect our physical health. For example, air quality has been shown to substantially affect health and

mortality (Walton et al., 2015). In China, air pollution affected mortality rates during various COVID-19 outbreaks (Chen, 2020).

Air pollution is known to enter the body and cause millions of deaths each year (Schraufnagel et al., 2019). A strong scientific review by the Forum of International Respiratory Societies' Environmental Committee analyzed the damaging effects of air pollution globally, and the results were overwhelming with over 70,000 scientific demonstrating air pollution is affecting our health (Schraufnagel et al., 2019). Ultra-tiny particulate matter has been shown to be carried around the body in the blood (Schraufnagel et al., 2019). Every organ of the body is impacted, and this can lead to dementia, heart and lung disease, diabetes, cancer, infertility, liver and skin problems and reduced intelligence (Schraufnagel et al., 2019). The systematic damage, similar to COVID-19, is due to widespread inflammation throughout the body. The WHO has warned that over 90% of the world's population is exposed to toxic air, which is surprisingly a bigger killer than tobacco smoking (Schraufnagel et al., 2019). Such a program focused on integrating yoga and eco therapy could also be beneficial in many of these conditions that often aren't attributed to breathing in toxic air. According to Zivin and Neidell, air pollution has hidden impacts, with respiratory and cardiovascular hospitalizations representing just the tip of the iceberg, as many health issues linked to air pollution do not require hospitalization (2018).

## **2.4 Yoga, Non-Violence & Nature**

Many of the ancient texts that yoga was founded upon, including the Rig Veda and the Yoga Vasistha, show reverence, respect and praise for the earth and nature. Other Eastern religious traditions that form the foundation of yoga, including Hinduism, Buddhism and Jainism, highly venerate the ethics of non-violence (ahimsa) and action (karma) with regard to



other living beings and our natural surroundings. The Acaranga Sutra, one of the founding texts of the Jain tradition, articulates the importance of non-violence towards all life forms (Chapple, 2000). Verse I.4.1 states, “all breathing, existing, living, sentient creatures should not be slain, nor treated with violence, nor abused, nor tormented, nor driven away. This is the pure, unchangeable, eternal law” (Chapple, 2000, p. 139).

The core teachings of yoga as defined by Patanjali, including the yamas and niyamas also share these philosophical undertones that uphold the natural world in all her beauty and splendor. Though cultivating natural awareness, ecological action follows. Through appreciating our environment and living a more minimalist lifestyle, we can lower our ecological impact on the planet. According to Chapple, Patanjali “urges the Yogi to practice non-violence in its broadest sense of the great vow (mahavratam), unrestricted by caste (jati), place (desha), time (kala) or circumstance (samaya), not unlike the manner urged by the Jainas” (2000, p. 146).

Such traditions, such as Yoga, Jainism and Buddhism, that emphasize karma theory and non-violence, lay the foundational underpinnings for ethical action in the face of climate change. Followers recognize the value of not harming the environment and, therefore, other animals, species and organisms. As Chapple states, the process of purification through lessening karma accretions by considering all of life as sacred, including the elements, minimizes violence towards other beings (2000, p. 148). From the individual level to the community, societal and global level, such profound respect for all life forms is what is needed in the modern world focused on the contrary values of competition, greed and self-advancement. In the Acaranga Sutra (II.4.2.11-12), Mahavira encourages monks and nuns to not see trees as a resource to be exploited for personal gain, but rather they should speak to the trees as “noble, high and round

with many branches, beautiful and magnificent” (Chapple, 2000). Through recognizing our intricate and sacred connection to nature, we can minimize harm in our external world.

According to Cornell, who has done a lot of work promoting Green Yoga and environmental activism within modern yoga, “ecological awareness is inherent to yoga” (Cornell, 2009, p. 146). Cornell is one of the founders of the Green Yoga Association, which was formed in 2004. Projects have included raising awareness around the toxicity of yoga mats made from plastics and PVC and greening Yoga studies to address environmental concerns. Cornell highlights yoga practices that integrate nature, including offering devotional prayers and blessings to all beings; focusing attention on how yoga postures connect us to the elements and the planet; meditation on the five elements; and engaging with conscious communities (2009). Some similarities with Cornell’s suggestions and this project included a discussion of the ecological implications of the yamas and niyamas; meditation and asana practice outdoors; and walking meditation with sensory awareness of surrounding nature (Cornell, 2009).

With the rise in popularity of yoga in the West, much of the spiritual relevance and values associated with nature, non-violence and the elements has been lost (Cornell, 2009). According to Cornell, “cultivating a conscious relationship with the forest and with the human community were arguable inherent in traditional paths” (2009, p. 152). As she mentions, it’s likely the connection with nature wasn’t explicitly mentioned because it was assumed to be part of everyday life (Cornell, 2009). However, in modern times we find ourselves having to make an explicit effort to connect with nature, especially when living in urban and population dense locations. Revival of our connection with our Earth and nature contributes to a greater understanding of our role in the world and the importance of sustainability.

## 2.5 COVID-19 & the Environment

The COVID-19 pandemic represents a micro issue related to a macro problem. That is the effects of climate change and environmental degradation include the rise of pandemics and spread of disease. The dominant industrial model of development emphasizes vast monocultures, disposable plastics and an over dependence on fossil fuels. COVID-19 is a lesson in sustainable solutions. At the same time, COVID-19 has also been a lesson in the global workings of our planet. Never have we been so aware of our own inter-connectedness than when we have been cut off from each other due to disruptions in travel and border controls, as well as the fragility of the current system reliant on international trade and global supply chains. There has been a call to rebuild better after the pandemic, rather than revert to outdated ways of the industrial age. Concerns about future pandemics and the decline of the environment are an impetus for change.

As humans encroach on previously untouched areas, myriad of problems occur, including habitat loss and destruction. Zoonotic disease is on the rise due to the interface between wild and domestic animals and humans (UNEP, 2020). According to the United Nations Environmental Protection Agency (UNEP), 60% of infectious disease in humans and 75% of all emerging infectious diseases are zoonotic (2020). Just in the last century, there have been an increase in outbreaks of novel coronaviruses. The emergence of zoonotic diseases is driven by over-population, rapid urbanization, an increased demand for animal protein, an increase in the exploitation of wildlife, agricultural intensification, inadequate animal husbandry and poorly managed wildlife, fresh produce markets, as well as industrial meat processing plants (UNEP, 2020).

The environment and our health are closely interrelated and depending on our connection to the natural world, including our microbiome, the strength of our immunity is impacted. This

connection between our immunity and exposure to the natural world is just being confirmed by modern science. A study by Blum et al. found that the soil microbiome and human gut microbiome are closely interlinked, with the health of one affecting the health of the other (2019). In fact, the author refers to the human intestinal microbiome and the soil microbiome as “superorganisms” that through “close contact, replenish each other with inoculants, genes and growth sustaining molecules” (Blum, Zechmeister-Boltenstern and Keiblinger, 2019, p. 287).

This research recognizes the fact that we are not separate from our environment, but rather we are interlinked and interrelated. We are our environment and our environment is us. We are made up of the natural elements. In the area of biophilia, the connection between humans and other living organisms is emphasized with nature showing a positive impact on happiness, which has been shaped by our evolution (Guite et al., 2006; O’Campo et al., 2009; Annerstedt et al., 2012).

In the Gallop World Poll, an international survey conducted in over 160 countries, respondents are asked about their views of the environment. Over half (62%) of respondents say they prioritize the environment over economic growth (Gallop World Poll, 2022). Only half of them were satisfied with what countries were doing to conserve the environment. People want to take actions to help preserve the environment, but in many cases, such as with recycling or composting, communities and states don’t do enough to facilitate sustainable waste removal. Often times people have to act on an individual level reducing consumption and composting their organic waste, supporting natural cycles and promoting biological systems.

A recent study found plastics in human blood for the first time in history (Leslie et al., 2022). The scientists analyzed the blood of 22 donors and found tiny particles of plastic in almost 80% of the people tested (Leslie et al., 2022). Just as with animals and fish, the

nanoplastic particles can travel around the body and lodge in various organs, causing damage to the human cells. This is the first study to identify a method for “validating polymer mass concentrations in human whole blood” and the first time “polymers from plastics were detected and quantified in human blood” (Leslie et al., 2022). Such polymers are a form of nanoplastic, and can lodge in the organs with a variety of health implications. Detection of microplastics have also been found in human lung tissue for the first time (Jenner et al., 2022).

The latest report by the Intergovernmental Panel on Climate Change revealed that governments and corporations are sticking to fossil fuels and thus exacerbating climate change (Masson et al., 2021). Such under action in finding alternative to fossil fuels, along with the clear cutting of forests for agriculture are undermining curbing emissions. The world is on the pathway for the 1.5 degree limit to double, which will have catastrophic consequences (Masson et al., 2021). This underscores the need to include environmental awareness and the promotion of sustainability in any field. Through raising awareness of our interconnection with nature and the importance of a healthy environment for health and healing, it is hoped that it will lead to more sustainable practices in daily life.

## **2.6 Yoga & COVID-19**

Yoga has been shown to strengthen the mind and body, while also promoting healing. Research has found that daily practice of yoga, including pranayama, asana, and meditation, decreases stress and inflammation, improves immunity, increases oxygen levels in the blood and increases the elasticity of the lungs through promoting comfortable and relaxed breathing (Patange and Sawarkar, 2020). In addition, a study done by Santaella et al. that pranayama or breathing practices improved respiratory functions in older adults (2011). Current solutions to

the COVID-19 pandemic from a yogic perspective have included asana practice to promote physical activity, meditation to calm the mind, and pranayama practices to improve lung function. Practicing yoga has been found to reduce anxiety and enhance coping strategies related to COVID-19, thus reducing stress and improving immunity (Nagarathna et al., 2021).

A study by Dr. Pradeep M. K. Nair argues that there is a need for interventions based on traditional practices, such as yoga and naturopathy, that focus on improving immunity and strengthening mental health (2020). The author mentions that such holistic treatments put more emphasis on prevention than treatment and, similar to this program, include sun-bathing and yoga therapy. The study purports the philosophical underpinnings of yoga and Ayurveda that emphasize the body's own healing capacity and focuses on the promotion of good health and overall well-being (Nair, 2020). In particular, the author argues that yoga emphasizes the health and wellness of the physical body, as well as the mental, emotional and spiritual body.

Ayurveda, the sister science of yoga, is closely linked and connected to the natural environment and seasons. Everything is made up of the elements, vayu (air), aakash (ether/space), jala (water), teja (fire) and prithvi (earth). A combination of the elements combine to form the doshas, an ayurvedic medical system of classification based on vata, kapha and pitta. As are humans, the seasons are also classified according to the primary dosha of that time. For example, autumn is vata with the cool, dry windy weather while winter is kapha – dark and damp. Late spring brings more warmth, light and pitta qualities, as does summer. There is an emphasis on returning to the natural cycles, including our circadian rhythm. Therefore, the program emphasized a return to nature and natural cycles. In addition, each woman's primary dosha was considered and the practice was adapted based on their needs.

Yoga and Ayurveda should be a preventive component when dealing with the COVID-19 pandemic. Again, yoga and Ayurveda focus on salutogenesis – that is on health and well-being rather than the disease itself. Strong immunity is the foundation of a healthy lifestyle and is key to preventing infections and sickness (Nair, 2020). The author includes various treatment modalities under the umbrella of yoga and naturopathy, including yoga postures, fasting, a healthy diet, sun-bathing to ensure sufficient Vitamin D, and hydrotherapy (such as sipping and gargling warm water or jal neti/nasal cleansing) (Nair, 2020). The author reviews the literature and scientific findings behind the practices he recommends, which are listed below. The practices have been shown to have an anti-viral and anti-inflammatory effect on the body. They also strengthen one's mental state.

Fasting involves abstaining from food for a period of time, which has been shown to reset the circadian rhythm (Stokkan et al., 2001), up-regulate key proteins of DNA repair and the immune system and has an anti-inflammatory effect on the respiratory tract by reducing the airway epithelial cell cytokine production (Mindikoglu et al., 2020). The author goes on to explain that viruses are dependent on nutrients to replicate themselves and through altering one's cellular metabolism and slowing down one's metabolism through fasting, one can decrease the host's susceptibility to viral infection (Nair, 2020).

Diet therapy is recommended as a preventative measure in terms of maintaining optimal nutrition for a strong immune system. Vitamins C, E and D play a major role in immune function, as well as other micronutrients. According to the author, nutrition is a key indicator of resilience to disease, which may be why so many Americans who suffer from obesity and malnourishment (not getting the right nutrients) succumbed to the disease.

Sun bathing is also recommended, similar to the program reviewed, and is a major treatment for naturopathy (Nair, 2020). Vitamin D is essential for so many bodily functions, including sleep and the regulation of circadian rhythms. It is also responsible for immune system functioning, having anti-bacterial and anti-viral effects with regard to tuberculosis and influenza (Nursyam et al., 2006; Hansdottir et al., 2008). Ten to fifteen minutes of sun exposure daily is enough to ensure a preventive effect against COVID-19.

Hydrotherapy involves sipping or gargling with warm water, which alleviates symptoms of the cold and flu – the warm water prevents the multiplication of viruses in the throat (Sanu & Eccles, 2008; Sakai et al., 2008; Satomura et al., 2005). Steam inhalation can also be helpful to clear mucus from the throat and upper respiratory tract. Jal neti is a yoga kriya that involves clearing the nostrils with warm water and is used traditionally to treat cold, cough and sinusitis; it has been used to treat asthma, pneumonia, bronchitis and tuberculosis (Pandey, 2009). It is also used to reduce anxiety and depression, and thus can be integrated as a preventative treatment related to COVID-19.

Finally, the author reviews the use of yoga as a preventative treatment. The fear of death and disease is considered a klesha in yoga philosophy, with stress being a factor that lowers one's immunity to disease. Given the psychological implications associated with COVID-19, yoga, with an emphasis on physical, mental and spiritual health, is an essential practice in preventing such effects. Unfortunately, little detail is provided as to the specific yogic practices that are helpful. The author does a thorough literature review and assessment of the suggested practices; however, case studies would be helpful in providing data to support the said therapeutic measures.



An article by Kulkarni et al., looks at how yoga is being used to combat the psychological impact of COVID-19 (2022). The study reviewed eight systematic reviews of a total of 243 articles related to mental health and yoga going back to May 2020. The reviews all demonstrated a positive impact of yoga on mental health for children, youth and adults (Kulkarni et al., 2022). However, it should be noted that the quality of some of the studies was low due to bias and sample size issues. While the article serves as a meta-analysis for all studies related to mental health and COVID-19, unfortunately the authors found only two studies to be of high quality – one was on laughter therapy and the other is a meta-analysis of yoga, meditation and mindfulness practices for tertiary students. The study by Breedvelt et al. conducted a review of 24 qualitative studies on yoga mindfulness and meditation among tertiary students, which met their inclusion criteria (2019). The results found moderate positive effects of yoga, meditation and mindfulness interventions for stress, anxiety and depression in tertiary students (Breedvelt et al., 2019).

A cross-sectional study related to mental well-being and yoga/meditation during the COVID-19 pandemic by Rasania found a positive correlation between mental wellbeing and practicing yoga and meditation (2021). Of the 649 subjects surveyed online, 25% were at risk of developing psychological distress and 17% were at risk of depression (Rasania, 2021). A higher frequency of practice of both yoga and meditation was associated with higher states of well-being (Rasania, 2021). Daily practice showed the most positive states of well-being, and there was no correlation with years of study (Rasania, 2021). This shows that daily consistent practice of both yoga and meditation are an essential component of mentally healing from the pandemic. Even the WHO has recognized yoga as a valuable tool for reducing communicable disease, while also increasing physical and mental well-being.

A study done by Ransing et al., looked at the role of yoga for mental health related to COVID-19, as well as building resiliency and fortitude in the face of natural disasters (2020). Such countries as India, Fiji and Bangladesh have experienced natural disasters, including cyclones, while also dealing with COVID-19. As Ransing et al. notes, natural disasters compound existing stressful conditions and make solutions for mental health, such as tele-counseling near impossible (2020). Internet connections are often disrupted and, not to mention, there is a digital divide in many developing countries where some people have limited access to technology.

A study by Bushnell et al. explores the literature around meditation and yoga practices as potential adjunctive treatment of SARS-CoV-2 infection and COVID-19 (2020). It was conducted by researchers from the Massachusetts Institute of Technology (MIT), University of California-San Diego, Chopra Library for Integrative Studies, and Harvard University. The results show that “certain meditation, yoga asana (postures), and pranayama (breathing) practices may possibly be effective adjunctive means of treating and/or preventing SARS-CoV-2 infection.” However, little detail is provided in terms of what postures, breathing practices and meditations can be utilized. In the scientifically rigorous review by Bushnell et al., meditation and yoga were proposed as adjunctive treatments for infectious diseases, including malaria, HIV/AIDS, and SARS, due to the anti-inflammatory effects associated with these practices (2020). This hyperinflammatory response is similar to the cytokine storm that many have experienced with COVID, which is the primary cause of death and disease (Bushnell et al., 2020). This hyperinflammatory response of the host is the main reason COVID-19 is causing such widespread damage.

There are an array of natural therapies with anti-viral and anti-inflammatory effects, which this research hopes to bring more attention to. For example, many of the practices chosen for the program have been shown to lower inflammation. They also stimulate the vagus nerve complex, which is a major component of the central and peripheral nervous system. Stimulating the vagus nerve can reverse the flight or fight response of the nervous system and induce a parasympathetic state of rest and digest. Increasing vagal tone has also been found to be effective in reducing psychological stress and trauma (Boyd, 2018). Even just six weeks of a twenty-minute daily meditation results in a significant reduction of proinflammatory transcription factors (Boyd et al., 2018). Chronic inflammation has also resulted from pollution (Abramson et al., 2020). Long term, chronically elevated levels of inflammation can contribute to an increased risk of cardiovascular disease and neurodegenerative diseases, such as Alzheimer's (Finch & Kulminski, 2019; Moir, Lathe & Tanzi (2018). Another study by Sawant, Zinjurke and Binorkar promoted the preventive aspects of Ayurveda and Yoga towards newly emerging diseases, such as COVID-19. Unfortunately, millions of research dollars have been investing in vaccines and drug solutions that target the virus or external agent, while the focus should rather be on enhancing immunity with integrative practitioners, which has gone largely unfunded (Bushnell et al., 2020).

### **III. Methods**

In this section, the primary practices of the six-week Eco-Yoga Therapy Program are discussed in detail. The project for mental health related to COVID-19 was designed using both clinical and traditional sources. This section reviews traditional yoga texts, as well as modern scientific research, that supports the various components of the program, including pranayama,

asana, dinacharya, meditation, chanting and mudras. Through the various components, the program addressed the various limbs or branches of yoga according to Patanjali. Overall programmatic goals included:

- improve well-being, mental health and healing during the global COVID-19 pandemic;
- enhance environmental awareness and connectivity in the face of climate change;
- increase knowledge related to yoga philosophy and foundational teachings.

Therapeutic goals included:

- alleviation of anxiety and depression symptoms;
- enhanced immunity and lower levels of inflammation;
- improved cardiovascular and respiratory function.

The target population for this therapeutic eco-yoga program included individuals who have previously contracted COVID-19 and/or individuals who are concerned about their mental health due directly or indirectly to the pandemic. It is also relevant for people dealing with long COVID-19 symptoms, including fatigue, shortness of breath, anxiety and/or depression. The program is applicable to individuals who may not have contracted the virus themselves but may know family members or friends that have or may be dealing with general anxiety and/or depression due to social isolation, restrictions or mandates.

Case 1 : The client is a 42 year old married women of Spanish/American descent, with a University level education and teacher, with 3 young biological children, including a new-born, and two teenage stepchildren. One month postpartum. The patient was diagnosed with COVID-19 days before giving birth to her third child, which was like a bad cold or flu. The newborn also contracted the virus after being born. She has a normal vaginal delivery, and went home shortly

from hospital shortly after giving birth. She felt stress during the diagnosis due to hospital restrictions and isolating members of family, and found it logistically tiring. She developed high blood pressure after birth 140/80 – perhaps due to stress of giving birth or from having COVID-19 and the stress of quarantining family members around the time of birth. Doctor put her on BP Rx which has brought it down. She has experienced more anxiety due to COVID-19. Patient goals were to reduce anxiety, feel calmer and be more in the present. She periodically has left hip pain that throbs without regular stretching. It's worse when sedentary. It hurts after walking for short distances but “is manageable and gets better with stretches.” “Without regular yoga practice, it can throb constantly.” With young children, she may be using one side predominantly when lifting/holding them. Regular stretching relieves pain. Yoga is her primary form of treatment to manage the pain. In terms of habits, she drinks a glass of wine per week more or less and does not smoke. She is somewhat inactive. She's seated a lot when nursing, doing paperwork or watching a TV series or movies. Client enjoys doing yoga and spending time outdoors. She lives on an old Olive farm and is going to Maine, where she grew up, for the summer. Her diet is predominately healthy and is 70% Plant Based; 30% Meat Based. Her sleep quality/quantity is broken. She goes to bed from 12 am to 6 am then from 6 am – 8 am with breaks for nursing every 3-4 hours. In terms of mood, two self-assessments measured anxiety and depression levels. GAD-7 Generalized Anxiety Scale: 10 (Mild anxiety). Zung Self-Rating Depression Scale: 32 (Classified as Normal <50 – no depression). Stress level at intake (0-10): 7/10. Energy levels at intake (0-10): 3/10. Hip pain 2/10. 12 second exhale at intake. Anxiety levels at final session declined to 7. Stress levels declined at final session: 4/10. Energy levels increased at final session: 7/10. Hip pain increased slightly: 3/10. 7 seconds exhale at final session (decreased significantly - client is breathing slower).

Case 2: The client is a 50 year old female, Kiwi, who lives in NZ with two teenage children. She is Case report generated using CARE-writer, care-writer.com married, and has a good support system. She works as a full time office manager and a farm at home. She got COVID-19 during the latter part of the program and continued doing restorative asana, pranyama practices and spending time outdoors. She recovered from breast cancer 7+ years ago, and is on Letrosole, a cancer inhibitor. She also has an underactive thyroid and is on Thyroxine. She has a family history of bowel cancer (paternal grandmother), breast cancer (maternal grandmother) and heart failure (maternal grandfather). She has a pronounced sway back and experiences a dull ache in lumbar region, which gets worse after strenuous exercise, such as lifting heavy objects (building stone wall) and monotonous tasks like weeding the garden. She doesn't smoke and drinks alcohol 1-2x per week. Pilates, yoga, daily psoas stretches, and rest help with the dull ache in her lower lumbar spine. She has the most energy in the morning. Her lifestyle is very active. She swims and does yoga regularly for flexibility, strength, balance and positive well-being. She does legs up the wall (vipariti karini) in evenings while watching videos which she enjoys. She does supine knees to chest and forward bends daily. Her diet is predominantly healthy but she eats too much sugar. Her sleep hygiene is generally good but she wakes between 3-4 am. She recognizes that her sleep quality is tied to her emotions. She awakes more frequently if she's stressed. She often has tension in her neck and shoulders due to stress. She displays good strength. In the Breath Assessment the first breath was quite restrained. She felt the extension of the breath upwards but not outwards. She recognizes that she "needs to work on the mid-range area" – blockage of energy through solar plexus and anahata chakra. She feels the breath more in her upper chest, as she is more conscious of this area. She takes strong full breaths. Breathing is her strength due to swimming. At intake, 7 Breaths per minute and 12 second exhale. GAD-7

Generalized Anxiety Scale: 1 (No anxiety). Zung Self-Rating Depression Scale: 22 (Classified as Normal <50 – no depression) Stress levels at intake: 3/10. Energy levels at intake: 9/10. Lumbar Back Pain level: 1/10. Stress levels at final session 3/10; Energy levels at final session 9/10.

Case 3: The client is a 46 year old British Female who lives in Belize (Husband Belizean) with her 2 sons, aged 10 and 12. She has a supportive husband and takes pride in her family. She is a realtor and has lost two businesses during Covid, which has been quite stressful. She works from home, as she lost her office. Since Covid, kids have been homeschooled online. She had Covid at the beginning of 2022, along with her partner and two sons. She felt exhausted. She has a “nagging pain in right hip.” Sitting all day makes the pain in her right hip worse. It's been quite debilitating - a dull aching pain that started 2-3 years ago. At one point the pain was very severe (“like sciatica or a trapped nerve”)/ Pain scale was 9-10/10 then. She said it was worse than childbirth (she has two kids). It was “hard man – I went through the mill.” At intake, pain was at a 3-4 “nagging ache”. Prior treatment included chiropractor visit and targeted exercises. She takes no medication for it but rather just does hip exercises massages it and does a pressure point on her hand for it. She realizes that a sedentary lifestyle makes the pain worse. The chiropractor advised client to change the way she stands. “My posture was all wrong and has caused some pain issues in my right hip.” Chiropractor told her that her alignment “was way off and she stands pigeon toed with her feet out.” Chiropractor told her she would need a hip operation in 10-15 years if she didn't do anything about it – “which is very scary”. Exercising and being aware of her posture relieves the pain, as well as stretching. She's “listening to myself.” It “does fare up and she gets bad episodes but it hasn't for along while.” She's more aware of her posture now. She feels a dull constant pain mostly when resting.” She used to smoke regularly but quit two years ago. She drinks alcohol occasionally on weekends. She is quite active and enjoys morning

walks and birdwatching in the bush. She has a predominantly healthy diet - mostly vegetarian and homemade. She generally sleeps well but wakes up at 2 am for a few hours regularly. She's trying to adopt a more positive attitude towards nightly waking. Stress levels were self reported as high. When there's a lot to do, her stress levels increase. The kids can be source of stress. She wants to yell at her kids less and be more patient. Family history of high blood pressure.

Maternal grandparents suffered from dementia towards end of life. Good strength. Breath Assessment - Upper chest breathing. Difficulty extending the exhale - more emphasis on inhale. Slightly strained breathing. Quick upper chest breathing. Not much belly movement. 18 breaths per min. Hip Pain level at intake (0-10): 3-4/10; Past Acute Pain level in hip (0-10): 9-10/10. GAD-7 (for generalized anxiety): 3 (No anxiety); Zung Self-rating Depression scale: 26 (Classified as Normal <50 – no depression). Stress levels at intake (0-10): 6-7/10. Energy levels at intake (0-10): 4/10. Stress levels at final sessions: 3/10. Energy levels at final session: 7/10

The women joined the program to reduce anxiety, be more aware of the present moment and to learn coping mechanisms during a period of change and uncertainty. They all had some previous experience with and understanding of yoga. The program was a time for self-care.

### **3.1 Components of the Program & Evidence-based Rationale**

Yoga improves resilience and contributes to healing the individual on the psychic and psychosomatic level. In addition, spending time in nature is associated with better health outcomes and positive mental health. Such an integrated approach helps to address the multifaceted dimensions of the pandemic. With yoga and eco-therapy, the focus is on salutogenesis and promoting good health, rather than a pathogenesis approach that focuses on curing the disease.



### 3.1.1 Pranayama (Breathing Practices)

Appropriate pranayama practices are an effective form of treatment for those experiencing mental health issues due directly or indirectly to COVID-19. According to the Yoga Sutras of Patanjali, pranayama is one of the eight limbs of yoga. For the sake of this project, pranayama makes up one of the most important components of the program. Anxiety affects how we breath. Pranayama practices strengthen the lungs and the diaphragm. Breathing practices also strengthen the pelvic floor and other ‘core muscles’, including the intercostal muscles (accessory muscles for breathing) located between the ribs. Pranayama practices have been shown to reduce stress, depression and anxiety. Efficient breathing is one of the most important tools for stress reduction and general well-being. Chronic stress contributes to an overactive sympathetic nervous system or a constant flight or fight response. As stress can contribute to anxiety through increased cortisol, pranayama practices reduce stress, decrease inflammation and oxidative stress, and strengthen the overall immune system. Pranayama is a great practice for those experiencing anxiety and depression on a physical and psychological level. It opens the chest, widens the diaphragm and helps one to breath more effectively.

In analyzing the population, their needs and potential pranayama exercises that may be beneficial to them, three types of pranayama were included, extended exhalation with belly breathing; nadi shodhana (alternate nostril breathing); and bhramari (humming bee breath).

(1) Extended exhalation is meant to slow down the breathing and bring awareness to the breath. The clients were instructed on belly breathing and extending the exhale to a 1:2 count (for example to a 3:6 or 4:8 count). One should also observe the pause between breaths. The pause between inhalation and exhalation has been found to enhance parasympathetic nervous system activity (Brown & Gerbarg, 2005). Extended exhalation with belly breathing is beneficial

for the respiratory, cardiovascular and autonomic nervous system (Russo, Santarelli, & O'Rourke, 2017).

(2) Nadi Shodhana pranayama practice helps to balance the right and left-brain hemispheres. It is also good for achieving a more balanced sattvic state, between rajas and tamas. Alternate nostril breathing has been found to relieve anxiety and depression; improve immunity; improve the functioning of the lungs; and help with respiratory disorders (Patange & Sawarkar, 2020).

(3) Humming breath or Brahmari is good for calming the body; relieving stress; promoting good health and wellbeing; and soothing the nervous system. One study found that the practice of Brahmari reduced Systolic blood pressure, Diastolic blood pressure and heart rate (HR) (Sujan et al., 2015).

These practices are important for inducing a rest and digest response. The breathing practice below have been found to be supportive as well as a preventative therapy for COVID-19. They strengthen the respiratory system, improve the strength of the lungs, and increase oxygen saturation through using all parts of the lungs. The bodies overall immune response is strengthened.

During the breath assessment in the first session, clients were also instructed on proper breathing methods, including the three-breath. This entails filling the lower abdomen first and feeling it expand on the inhale (like blowing up a balloon). Then the middle part of the chest is filled with air, and finally the upper chest is filled (without tensing and raising the shoulders). The goal is to remediate unhealthy reverse breathing patterns, including upper chest breathing, which contributes to anxiety. The idea is to maximize oxygen intake and exercise each section of

the lungs. It also strengthens the diaphragm and intercostal muscles, which are accessory muscles to breathing.

**Table 1 Pranayama (Breathing) Practices**

PRACTICE	PURPOSE
3-part breath	To reverse unhealthy breathing patterns (upper chest breathing). To strengthen lungs and diaphragm.
Diaphragmatic breathing w/ Extended exhale	For reversing upper chest breathing & promoting belly breathing to induce a relaxed state. Extended exhale to promote parasympathetic nervous system/rest and digest response.
Nadi Shodhana (alternate nostril breathing)	To achieve a more sattvic state and relieve depression and anxiety symptoms.
Bhramari (humming bee breath)	To promote better sleep. Frequent waking at night due to stress/unsettled thoughts. Calms the mind.

While there are a plethora of pranayama practices that would also be quite useful, the above were chosen based on the specific needs of the client and due to their therapeutic effects on mental health and COVID-19. Other pranayama practices that would be beneficial for people dealing with anxiety and depression include Kapalabhati (skull shining breath) and Mukha Bhastrika (bellows breath). Kapalabhati improves the digestive functions, enhances endorphins and mood, and improves lung function. It should be practiced at least 21 times. Mukha Bhastrika or bellows breath strengthens the immune system, lungs and diaphragm. It stokes agni or the internal fire, and is thus good for digestion. It is also known to be good for blockages in the lungs and reducing inflammation in the throat. It is even suitable for people with asthma. Also, slight breath holds after the exhale and before the inhale have been shown to increase CO<sub>2</sub> levels and nitric oxide in the body. These are natural vasodilators, and thus would be helpful for those experiencing long COVID symptoms, such as shortness of breath. Nitric oxide has been used to

treat people with acute respiratory distress and improve gas exchange in the lungs enhancing the oxygenation of the blood (Garfield et al., 2020). However, these practices were not taught due to time constraints. They are also more advanced and the clients seemed to benefit greatly from simple and easy to do breathing practices.

### **3.1.2 Asana (Physical Postures)**

Appropriate asana is an effective form of treatment for those experiencing mental health issues due directly or indirectly to COVID-19. Five key asana were included in the program. They were specifically picked given their targeted benefits and include a blend of strength building and balancing postures, inversions, restorative postures, back bends and heart openers. The choice of just five asana was intended to allow the participants to integrate other areas of the program, including pranayama, meditation, chanting and mudras, for a more balanced approach to their daily sadhana (practice). While other asana were also included in the online weekly sessions, for the students to practice at home, only the five below were given for focused home practice.

Recommended Asana included:

- (1) Utkatasana (chair pose) (dynamically and with a twist) – This is a strengthening posture that improves balance and coordination, strengthens the core muscles in the abdomen and back and helps one feel more empowered. This posture, as well as similar asana, including tadasana (mountain pose), vrksasana (tree pose) and adho mukha svanasana (warrior I), strengthen and tone the abdominal muscles (Hamrick et al., 2017), which in turn strengthens the diaphragm. Chair pose was done with a twist to each side to massage the abdominal region in the case of digestive issues.

- (2) Adho muka svanansana (downward dog) – This asana works the whole body and is thus good for individuals who have been sedentary. It strengthens the spine and back and improves posture. It promotes circulation, improves energy levels and clears breathing passage ways. It is both a strengthening and flexibility posture. In addition, inversions open space for the heart, strengthen the diaphragm and promote healthy breathing.
- (3) Dhanurasana (bow pose) – This is a backbend that is done from a supine position, lying on the stomach. It stimulates the digestive organs, opens the heart and lungs, and strengthens the spine. This posture also opens the hip flexors, strengthens the hamstrings and is good for promoting upright posture. In addition, it stimulates the adrenal glands.
- (4) Setu bhandasana (bridge pose) – This is a chest opener that strengthens the back, gluts, and legs. It also opens the hips and improves digestion. Circulation is increased to the chest, head and brain. Overall, this back bend has a calming effect on the body and mind. It opens the thoracic spine and opens the chest cavity. It reverses kyphosis, or rounding of the upper spine.
- (5) Vipariti karani (legs up the wall) – This is a restorative posture to counteract stress and induce the relaxation response. This is both an asana and a mudra. With the head below the heart, it promotes circulation and has a positive effect on the psycho-neuro-endocrine axis (Bhavanani, 2011). This is a restful inversion, that by the virtue of relieving stress, will also minimize inflammatory responses (Kiecolt-Glaser et al., 2010). Other benefits include the draining of the lower extremities, increased circulation to the abdomen, chest and head and improvement of anxiety and depression.

Throughout the asana practice, students were directed to have their attention flow inwards, enhancing interoception or inner nonjudgmental awareness. Building awareness around

breath and movement of the body occurred, including timing the breath with the movement to increase the mobility of the rib cage, clear airways and increase the strength and elasticity of the respiratory muscles. Postures were chosen to promote relaxation and counteract the stress response. Stress is one of the main causes of stress hormones, such as adrenaline, and thus inflammation in the body.

There are many other postures that could have been included in the study, but for the sake of simplicity, relevance and therapeutic effects, the above were specifically selected. A balancing posture would have also been good to include, such as Vrksasana (tree pose), which focuses and calms the mind. It strengthens the leg muscles, while elongating the spine, opening the chest and counteracting rounded shoulders. It helps one to feel grounded as well as flexible (like a tree). It promotes focus and concentration and enhances stability and confidence. Through contributing to a relaxed body and calm mind, it is good for anxiety and depression.

**Table 2 Asana for Eco-Yoga Therapy Program for MH/COVID-19**

PLANNED PRACTICE	PURPOSE
Utkatasana or chair pose (dynamically/twist)	Encourages strength and stability
Adho muka svanansana (downward dog)	Promotes circulation, improves energy levels and clears breathing passage ways.
Dhanurasana (bow pose)	Heart opener to strengthen the heart, lungs and diaphragm. For spinal flexibility, especially important for women as they age.
Setu bandhasa (bridge pose)(dynamic flow)	Opens the chest to stretch the heart and lungs. To promote positive psycho-emotional responses to counteract any anxiety or depression.
Vipariti karani (legs up the wall)	Restorative posture that initiates a rest and digest state to counteract the stress response.

### 3.1.3 Dinacharya (Lifestyle Choices)

A primary aim of the projects was to familiarize the clients with a philosophical understanding of yoga, beyond just the asana component often emphasized in modern society.

As such, an understanding of the foundational components, including the role of ethical behavior towards oneself and others is important. A primary focus of study was on the yamas and niyamas, as defined by Patanjali. The yamas focus on our relationships with the outside world and include: (1) ahimsa or non-violence; (2) satya or truth; (3) asteya or non-stealing; (4) bramacharya or moderation in sexual activities; and (5) aparigraha or generosity. The niyamas include: (1) saucha or purity/cleanliness; (2) santosha or contentment; (3) tapas or discipline; (4) svadyaya or self-study; and (5) ishvara pranidhana or surrender to a higher source. At the route of cultivating the yamas and niyamas is a positive state of mind.

A particular challenge for many people suffering from depression and/or anxiety has to do with their thought patterns. They are more likely to engage in negative thinking and destructive self-talk. Such negative thoughts go against the yamas and niyamas. The concept of pratipaksha bhavana is a helpful tool in counteracting negative thought patterns. In Sanskrit, “pratipaksha” means “opposite” and “bhavana” means “cultivation”. Patanjali encourages us in Sutra 2.33 “vitarkabādhane pratipaksabhāvanam” to cultivate the opposite of negative thoughts or vitarkas (doubts). We learn from Patanjali that these doubts or uncertainties, such as sadness, violence, greed, worry or anger, arise and distract us from the yamas and niyamas. We must actively counteract negativity thoughts through the promotion of the opposite or positive thinking. One gains empowerment through this practice of changing our thinking. If we experience anger, we work on cultivating peace instead. With unkind thoughts, we rather promote kindness. If we are envious, we rather focus on contentment, recognizing that we often only see or perceive other's highlights and not the reality of their everyday lives.

The field of scientific research known as neuroplasticity gives hope and inspiration for establishing new neuronal connections and thought patterns. Neuroplasticity refers to the ability

of the brain to change and rewire neural connections. Our brains are not static but our continually changing throughout our lives. Just as depression and stress may induce maladaptive changes in our brain, we also have the capacity to change the brain in the opposite direction and create new neuronal pathways. If negative thoughts arise, this practice involves working on letting them go and focusing on other more positive thoughts, remembering to be patient and gentle with oneself. This also involves practicing self-compassion. Ultimately, this reflection on the yamas and negative thought patterns and rumination is about building self-efficacy and stabilizing the mind.

Studies have found that COVID-19 has resulted in sleep issues due to anxiety, worry, isolation and an increase in screen time during lockdowns. Healthy sleep patterns have been shown to decrease anxiety and depression (Plante, 2021). Studies show that blue light interferes with our circadian rhythm and sleep patterns (Wang et al., 2020), thus one should avoid screen time before bed. Spending time in the sun and getting Vitamin D is scientifically proven to improve mood (Pencoker et al., 2017) and has also been shown to decrease the severity of COVID-19 (Ali, 2020). Vitamin D is responsible for calcium metabolism and immune system function (Mead, 2008). Spending time in nature has a variety of positive health impacts including reducing stress, blood pressure, improving mood and cognition (Davis et al., 2021; Chalquist, 2009; Grahn, Ottosson & Uvnas-Moberg, 2021). Scientific research also supports the positive effects of meditation in nature, including reducing anxiety and stress, improving mood, and lowering blood pressure (Reangsing et al., 2021).

Lifestyle choices play a big part in our underlying health and well-being. Therefore, daily practices that promote healing are an important component of this intervention for anxiety and depression related to COVID-19 program. The lifestyle recommendations for the program include: sun bathing, spending time in nature daily, and obtaining adequate sleep, including



improving sleep hygiene such as no internet or screen time before bed. It was recommended that the dinacharya recommendations be practiced with pratipaksha bhavana, being present and counteracting negative thought patterns with positive thoughts.

The practices include:

- (1) Sun bathing – This dinacharya is to be included as part of one's daily routine, sitting quietly in nature either meditating or just relaxing and absorbing Vitamin D through the sun's rays. Daily regular practice results in one feeling revitalized and refreshed. This increases stress resilience and makes one more adaptable in handling unpredictable situations, such as the pandemic. Vitamin D is also scientifically proven to improve sleep cycles.
- (2) Daily time in nature - This dinacharya involves making some outdoor time a daily part of one's routine. This may involve gardening, tree planting or walks in nature. In yoga and the sister science of Ayurveda, humans are made up of the elements, including earth, water, air, ether, and fire. We are not separate from nature, but a part of it.
- (3) Mindful consumption and sleep patterns – This involves ensuring sufficient sleep, such as 8-hours per night, and going to bed at a regular hour. Avoiding the phone, TV, computer and/or the news/social media during the evening hours as the sun sets has also been shown to improve sleep. Reducing consumption of artificial lights and disturbing news helps to calm and center oneself before bed.

#### **3.1.4 Dhyana (Meditation)**

Meditation and relaxation in nature plays a central role in addressing mental health related to COVID-19. The effects of meditation have been shown to support positive health and well-being. In particular, mindfulness meditation is an effective way to manage stress and

counteract depression while emphasizing self-care and compassion (Li, 2020). When you are anxious and depressed, your body releases cortisol and other stress hormones that contribute to inflammation. With the classic cytokine storm associated with COVID-19, this is exacerbated. The meditative component of the program, in combination with interaction with our natural environment, are crucial. The activities include: meditation while in the sun, forest bathing (inspired by the Japanese practice of *shinrin-yoku*), and mindful yogic gardening. These activities have all been proven to be beneficial for decreasing symptoms of depression and anxiety.

The health benefits of mindfulness meditation are well-documented, in particular for anxiety and depression (Yu-Feng Li et al., 2020; Malcolm, 2008). In a study by Malcolm, those with more severe depression showed the most benefit from a cognitive-based mindfulness program (2008). In addition, the healing effects of nature have also been proven through modern scientific studies (Davis et al., 2021; Chalquist, 2009; Grahn, Ottosson, & Uvnas-Moberg 2021). The *pratyahara* component of this program includes mindfulness meditation in natural settings to increase the therapeutic value. The meditations include a sun meditation, forest bathing and mindful yogic organic gardening. The sun is essential for our health and well-being. In fact, people suffering from depression had higher levels of Vitamin D deficiency (Penckofer et al., 2010; Berk et al., 2007). Another study found that higher levels of sun exposure, and not actually Vitamin D, were associated with less depressive symptoms and fatigue in people with multiple sclerosis (Knippenberg et al., 2014). Regardless, the sun and Vitamin D play an important role with regard to our body's immunity.

Respiratory infections coincide with lower levels of Vitamin D during the winter (Rhodes et al., 2020). In fact, researchers studying the link between Vitamin D and COVID-19 compared

the mortality rate of COVID-19 in relation to the latitude of different countries and found a 4.4% increase in mortality for each degree of latitude north of 28 degrees (Rhodes et al., 2020). This means that Vitamin D offers a protective function against COVID-19. A lack of Vitamin D also affects our circadian rhythms and sleep cycles, which also affects mental health.

This practice involves meditating while absorbing the sun's healing rays. The meditation involves watching the breath and observing the thoughts with non-judgement and non-attachment. In a comfortable upright position facing the sun, take 20 minutes to breath fully. You can imagine the sun's rays infiltrating all areas of the body. If there is a particular area of the body where you are experiencing pain or discomfort, imagine the ball of the sun radiating out from here. You can also chant the Gayatri mantra while lifting the arms in front of the body and framing the sun with the thumbs together and hands outstretched with the palms facing the sun on the inhale. On the exhale bring the hands to the heart in prayer position. The Gayatri mudra purifies and cleanses both the physical and emotional body. Combined with the healing power of the sun, it is a powerful practice for raising one's internal vibration and removing internal blockages.

Forest bathing is modeled after the Japanese practice of *shinrin-yoku*, "shinrin" meaning forest and "yoku" meaning bath has been found to have a multitude of benefits (Lee & Miyazaki, 2011). A study in Japanese men showed that it increased parasympathetic nervous activity and suppressed sympathetic activity (Lee & Miyazaki, 2011). Cortisol levels and the pulse rate also decreased (Lee & Miyazaki, 2011). Most importantly, it improved mood and decreased negative feelings (Lee & Miyazaki, 2011). This practice involves sitting or walking through a forest for 20 minutes while observing the thoughts and letting them go. The focus is on the noises, sights and smells of the forest. This can also be practiced while seated in the forest or jungle, or even

under a tree. One can also do forest bathing while walking. During walking meditation, one brings their attention to the present moment, being mindful of the sounds, smells and sights.

Yogic gardening has been practiced in India for decades to improve yield, enhance one's connection with the seeds and plants, and allow the farmer to reach a meditative state. While there hasn't been a lot of scientific research into the subject, thousands of Indian farmers have attested to its benefits. Yogic gardening is based in meditation and originated from the Bhrama Kumaris spiritual movement in India in the early 2000s (Jagani, 2021).

Small scale studies have shown that meditation and positive thoughts directed towards the seeds and plants can improve seed quality and improve yield without a reliance of agro-chemicals or genetically modified seeds (Jagani, 2021). Yogic farming entails a deep connection with nature and a recognition of our physical and spiritual connection, while promoting sustainable farming. It has been shown to increase soil microbial population and lead to germination of seeds up to a week faster than other methods (Jensen, 2021). Crops have also been shown to be higher in vitamins, minerals, iron, protein, and energy in comparison with conventionally grown produce, and even in comparison with organic agriculture (Jensen, 2021). A peer reviewed study by two agricultural universities in India showed that tomato crops growing using yogic farming had 146% more vitamin C than tomatoes grown using conventional farming methods (Pandey et al., 2015). In addition, such methods were found to be \$330 cheaper per acre than using chemicals or pesticides to grow food (Pandey et al., 2015). Mindful yogic gardening involves bringing all of one's attention to the present moment and cultivating a sense of non-judgement, acceptance and self-compassion. One's attention is directed to the present moment, including external sounds, such as the noises in the surrounding environment (birds singing, wind blowing through the trees, etc). Chanting mantra and directing love and attention

towards the plants, a sort of meta (loving kindness) meditation are also helpful. The benefits to organic gardening, include sunshine, fresh air, exercise, contact with the soil, and organic fruits and vegetables.

**Table 3 Summary of Dinarcharya (lifestyle habits)**

Sunlight Meditation	Enhance Vitamin D & peaceful thoughts.
Forest Bathing	Increase oxygen levels & connect w/nature
Mindful Yogic Gardening	Focus on + compassionate thoughts (meta)

### 3.1.5 Chanting & Mudras

Chanting is an effective form of treatment for those experiencing mental health issues due, directly or indirectly, to COVID-19. In analyzing my population, their needs and potential mantras that may be beneficial to them, I decided that chanting Om would be most appropriate. It has many physical and mental health benefits that make it suitable for this population. . It helps to quiet the mind and instill a sense of peace and surrender. There are many positive side effects as a result of the practice, including cardiovascular and respiratory health and mental well-being. Daily practice also strengthens the diaphragm and core. It also promotes deep breathing and extension of the exhale, which is good for those who have previously had COVID-19. Not to mention, this is a spiritual practice, which builds resiliency to stress and uncertainty. Chanting Om is a traditional Hindu practice that is sacred and connects one with the Divine. Om is the first sound of the Universe. It is a meditative practice and helps one to achieve higher states of consciousness. Om is the sound of God or the Universe in Hinduism. It is a spiritual practice rooted in devotion and acquiescence to a higher force. The Yoga Sutras of Patanjali describe Om as Pranava that is Iswara. Om has been found to quiet the mind and assist with meditative states.

There are many physical benefits from chanting Om. The humming sound produced from chanting stimulates the vagus nerve, as well as the hypothalamus and pituitary gland. The traditional practice is good for calming the autonomic nervous system and the hormonal system. Studies have found that chanting Om can lower blood pressure and reduce heart rate (Telles et al., 1995; Telles et al., 1998). Chanting extends the exhale and is also good for the respiratory system and strengthening the diaphragm and pelvic floor. It has even been found to stimulate the vagus nerve and thus be good for depression (Amin et al., 2016). A study done with women between 50-60 with hypertension, found chanting Om was effective in lowering anxiety, depression and stress (Amin et al., 2016). While chanting Om may not be familiar to the common person, the traditional practice is easy and approachable. Perhaps, given this is a practice that all may not be comfortable with, the religious element may interfere with compliance. In terms of feasibility, it is quite easy to learn.

Mudras are an effective form of treatment for those experiencing mental health issues due to COVID-19. Mudra means “gesture” or “seal” in Sanskrit, and are hand gestures that channel energy through the body and connect us to a higher source. They have a long history in both Yoga and Buddhism, having been used for thousands of years, offering deep meaning and healing on a spiritual level. Mudras help to draw one's focus inwards and provoke a meditative state. They evoke a subtle body experience and are great to include in conjunction with another practice, such as pranayama or meditation. Understanding the historical and cultural significance of the mudra clarifies the intent behind it. It's the intent behind the practice that is important. Two mudras are especially pertinent to people dealing with mental health issues including vayu mudra and prithvi mudra. Vayu mudra is actually done in preparation for prithvi mudra, so it is included first. Vayu mudra is the mudra associated with air and is thus very appropriate for the

study population. It is also said to enhance immunity against coughs and colds. Prithvi Mudra is the earth mudra. This mudra has been said to decrease anxiety and depression while increasing one's connection to the healing powers of the Mother Earth.

Vayu means air in Sanskrit and the Vayu mudra helps to heal any imbalances in air caused by disease. It is said to reduce excess air and strengthen the lungs and immune system. Prithvi Mudra is the mudra of the Earth. The energy of this mudra comes from Mother Earth and is said to improve self-confidence and relieve anxiety and depression. It reportedly reduces negative emotions and can also help one to gain weight, which may be relevant if one's appetite is affected by depression. The ancient yogic text, including the Gheranda Samhita, mention this mudra in relation to agni mudra. It is said that Prithvi mudra balances the earth and fire or agni elements, therefore helping with digestion. The ring finger represents the earth element and the thumb represents the fire element, so in effect, this mudra is increasing the earth element and decreasing the fire element. Research has shown that regular practice of 16 mudras for 10 to 15 minutes each day positively affects the respiratory system and is said to open the lungs, remove cough and congestion, and dilate the bronchial tubes (Singh, 2015).

#### **IV. Results & Discussion**

This literature review has compiled the relevant findings and data from studies related to COVID-19, yoga and eco-therapy. In addition, the results from a six-week Eco-Yoga Therapy Program indicate beneficial results from yoga and time in nature. These results confirm the findings of a literature review done by James-Palmer et al. (2020), which evaluated the effectiveness of a yoga interventions in reducing symptoms of anxiety and depression with youth. Twenty-seven studies, from weak to moderate, were reviewed with the intervention

including postures, breathing, meditation and relaxation and results showing reductions in anxiety and marginal reductions in depression (James-Palmer et al., 2020).

The six-week intervention based on Eco-Yoga Therapy was proved effected for decreasing stress levels, increasing energy levels and sleep quality, as well as self-awareness. All clients felt more energy after practicing the pranayama and asana practices. The three part breath was helpful to do when waking in the middle of the night to calm the mind. It also helped with increasing awareness of the movement of prana through, including enhancing the subtle body awareness of prana spiraling up and down through the central energy channels. The pranayama practices helped to increase awareness of the breath and the connection between the emotions and how they affect breathing patterns. Nadi shodhana was also particularly helpful for increasing energy and feeling calmer and more centered. All participants recognized the importance of increasing time for self-care in their daily lives. Bhramari was especially effective in dealing with sleep issues. Clients reported having healthier coping mechanisms as a result of the program to deal with stress and anxiety. The breath was used for grounding and to release negative emotions.

With regard to results, clients reported an increase an energy and a decrease in anxiety and stress as a result of the practices. Clients self-reported improvements in anxiety levels due to COVID-19. They reversed unhealthy breathing patterns (upper chest breathing), and began taking slower, deeper breaths. Client 3 had an "ah-ha moment" while observing the movement of prana throughout the three-part breath on both the front and back of the body. She felt "the expansion, support and radiation of the front and back of the body cohesively" and found it "empowering" and left her feeling strong. She "felt more energy and strength physically and



within." She felt her solar plexus energetically and used the visualization of a bright sun. Client 2 left the program equipped with "a tool box" of practices to manage emotions, mental health, discomfort and pain. Clients were especially appreciative of the pranyama (breathing practices), asana (physical postures) and spending time in nature. More specifically, nadi shodhana (alternate nostril breathing) gave clients more energy, and helped her to feel more balanced, less anxious and it calmed the mind. Bhramari also was found to have a calming effect on the mind and breath. Client 2 found Bhramari incredibly helpful while she had COVID as she "felt it particularly in the heart area and upper lungs where most of my COVID symptoms seemed to focus." Clients felt calmer and stiller after pranayama practices.

The clients appreciated the more in-depth analysis of the philosophical underpinnings of yoga, including the yamas and the niyamas. They expressed the desire to learn more. In particular, they appreciated the idea of pratipaksha bhavana to cultivate opposite emotions and to deal with ruminating thoughts. The asana practices increased awareness of body movement and the connection with the breath. They showed efficacy in using the breath to release physical tension. Clients found walking in nature and spending time daily outdoors as helpful for clearing the mind. One client found that doing her daily asana and breathing practices while watching the sunrise helped her to increase her energy levels and levels of happiness, leaving her clean and refreshed to start the day.

Clients really enjoyed the pranayama and asana practices. Client 3 originally joined the program to prepare for trying times as COVID-19 cases rose in NZ, but then ended up contracting COVID herself. She modified the practices, including practicing chair gently; downward dog was modified to cat/cow; bow was modified over a bolster and bridge was also

supported with a bolster and blankets. Vipariti karani or legs up the wall was a great restorative practice she used multiple times a day during her recuperation from COVID. Tree pose was practiced under trees. I encouraged meditation and mentioned that all it is essentially is watching the breath. Clients were already familiar with yoga, so this is was a reminder but said more detail would have been helpful if she didn't already know much about yoga. Also, at least eight weeks of practices would have given a bit longer to see results.

Clients will continue to incorporate daily time in nature ("even if it's just for 20 minutes per day" ~ Client 2). One client described the sun as an incredible "elixir", in stark contrast to who she used to view the sun, as "exhausting and distracting" (Client 3). She "felt she really drank in the sunshine and it's healing effects while laying in restorative postures" (Client 3). One client mentioned "that COVID gave her a chance to just be on the farm, really enjoying, noticing, and appreciating being in a beautiful space (Client 3)" She felt "connected to the place with a good vision moving forward" (Client 3). One client was learning "to be happy for small efforts that are regular than one big sweeping gesture infrequently" (Client 3). This was in reference to gardening, but could also apply to the yoga practice in general. Clients enjoyed the way the course and content from each week built on the previous week, reinforcing a strong foundation. One client from the Gayatri Mudra while meditating on the sun especially helpful. The program also allowed students to gain a more in-depth understanding of yoga, as well as mudras and mantras in particular. Clients found beautiful places of calm and stillness to practice. The focus on dinacharya reaffirmed the lifestyle choices of the clients, including living simply, with "a quiet sense of purpose in making the world a better place" (Client 3). Clients also found that the program brought more attention to their sleep patterns, and will continue to work on going to bed earlier and prioritizing sleep.

## V. Conclusion

The COVID-19 pandemic has exacerbated the existing mental health crisis, and governments should respond by funding psychosocial support programs and adjunctive treatments. It is hoped that this review will help to raise awareness of mental health issues and possible public health solutions to policy makers and social workers. Tools should be given to medical professionals and yoga practitioners to assist with screening for mental health concerns. The goal is to promote the preventative aspects of yoga and nature therapy in the face of COVID-19 and other emerging diseases.

Yoga appears to be most efficient in dealing with the associated stress, depression and anxiety related to COVID-19. Yoga is known as a physical, mental and spiritual practice. A deeper understanding of what yoga entails is necessary to fully appreciate the spectrum of health and therapy interventions related to COVID-19 and mental health. For example, pranayama or breathing practices help with restoring respiratory functions, especially in older adults (Santaella et al., 2011). Pranayama is an essential part of any yoga practice. Saoji, Raghavendra and Manjunath conducted a comprehensive review of pranayama and yogic breathing, and found positive results from pranayama practices in over 1400 sited articles searched through PubMed (2019). In addition, an understanding of the philosophical underpinnings of yoga, including a thorough understanding of the eight limbs, the yama and nimaya (ethical discipline towards oneself and others), and ancient yogic texts ensure the appreciation and not appropriation of this ancient art. The understanding should not be gleaned superficially, but rather through sadhana or practice and experiential learning. The health benefits of yoga have been known for centuries and have more recently been well-documented in western medicine (Smith, Lyons & Esat, 2019;

Ramamoorthi, Garehman, Skinner & Moss, 2019; Zope et al., 2021), in particular for anxiety and depression (Busung et al., 2012; Belam, 2020). The healing effects of nature have also been proven through modern scientific studies (Davis et al., 2021; Chalquist, 2009; Grahn, Ottosson, & Uvnas-Moberg 2021). Therefore, the goal was to design a program that was a combination of yoga and ecotherapy. It is self-directed, while also tailored to each client, for addressing overall mental health related to COVID-19.

While a connection to nature and a healthy environment are important for strong immunity and public health, yoga is also integral. Research has shown yoga as an effective conjunctive treatment to COVID-19 related issues, including mental health. Yoga takes a holistic approach to health and healing. The focus is on salutogenesis and strengthening the immune system. With the current COVID-19 scenario, it proves difficult to separate healing from nature for example Vitamin D from the sun plays an important role in healing from respiratory illness. We affect our environment and our environment affect us. Just as healthy natural surroundings promotes positive health in our physical, mental and spiritual body, a polluted environment detrimentally affects our health. In conclusion, the multidimensional effects of the pandemic necessitate an integrated approach to mental health related to COVID-19, and combining both yoga and nature therapy can be an effective tool for managing well-being.

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