

## The Investigative Study on Ayurveda Management and Preventive Measures for the Impact of Covid-19 among Elderly People

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## THE INVESTIGATIVE STUDY ON AYURVEDA MANAGEMENT AND PREVENTIVE MEASURES FOR THE IMPACT OF COVID-19 AMONG ELDERLY PEOPLE

**Abstract:** Elderly people were most at risk of death from pandemics. There were more health and care facilities and preventive measures to the impact of COVID-19. Due to the rapid increase in mortality among elders, this literature review was done to reveal the management methods mentioned in Ayurveda regarding the prevention of COVID-19. And other criteria were how to correlate the *Janapadodhwansa* with pandemics and COVID-19, pandemic preventive measures for the elderly, clinical management of pandemics, and the suitable management to be taken after the infection. Data collection for the research was done as a literature review with authentic Ayurveda texts and 36 research articles published from 2010 to 2022. Electronic databases were used to review the related published works. According to the Ayurveda, *Dinacharya*, *Rithucharya*, *Sadvritta*, and *Achara Rasayana* inculcate discipline in a person and make righteous health habits. As a therapeutic measure, enhancing *Vyadhikshamathwa* is the main point of managing pandemic diseases in Ayurveda. Especially elderly people can be protected by using *Rasāyana karma*, *Ojōwardhaka* therapy, *Vājīkarana* therapy, *Lēhana karma*, and *yoga*. *Vayasthapana* treatments are taken specially for increasing immunity and nourishment. *Shōdhana* treatments can be used to prevent the recurrence of the diseases in elderly people. It can be concluded from the review that the behavioral patterns, dietary regimens, and medications in Ayurveda can prevent COVID-19 among elderly people.

**Keywords:** Elder people, pandemics, covid 19, Ayurveda management

### Introduction

In Sri Lanka, 12.3% of the population is aged 60 or over, making it the country with the largest population of elderly in South Asia. The Western Province has the highest percentage of adults in the country, which is 31.7%, while the Northern Province has the lowest percentage. It's 4.8%. By 2030, 1 in 6 people in the world will be aged 60 years or over. The number of persons aged 80 years or older is anticipated to triple between 2020 and 2050 to reach 426 million in the world. Biological aging leads to a gradual decrease in physical and mental capacity, a growing threat of disease, and eventually death. Beyond biological changes, aging is frequently associated with other life transitions similar as retirement, relocation to more appropriate housing, and the death of friends and mates. (Sadana, 2023) Compared with the Ayurveda conception *Jara* and *Vriddhavastha* corresponded, and Ayush( lifespan) is divided into six groups. Among them, older age is categorized as the last stage of life (*Jirna* or *Vriddhavastha*). (Rao, 2018)

During the COVID-19 pandemic, elderly populations were impacted more than other populations worldwide. Neurological and mental complications like delirium, stroke, agitation etc. were occurred among the elders. Especially older people are known to experience loneliness, age discrimination, and excessive worry. As well as decreased social life and fewer in-person social interaction is occasionally associated with reduced quality of life, increased depression, sleep disorders and decreased immune power in older people. (Joy, 2023) Considering the current social situation and certain periods in the

past, it can be seen that people have been severely affected by various epidemics. Outbreaks appear to be exacerbated throughout the world. 220 countries were affected by the Covid-19 pandemic. 767,750,853 of total global Covid-19 cases were reported. Among them, 6,941,095 population were dead.

Ayurveda has got the potential for prevention of diseases by promotion of health and management of diseases occurring in older age. In particular, issues such as anti-ageing treatments, regenerating body energy, increasing longevity, and improving immunity are discussed under the *Rasayana tantra*. Also, the chapter of *Janapadhovanshaniya* has been mentioned regarding preventive measures of infectious diseases and whole *acharyas* have been mentioned regarding management of the infectious diseases. (Joy, 2023) This research envisages a narrative study of ways to protect the elderly from the possible COVID-19 epidemic and the epidemics that have affected the world in the near future using *Ashtangayurveda*.

## **Methodology**

In this literature investigation, the literature search was performed by two authors. Mainly used Ayurveda texts books such as, *Charaka samhitha*, *Susrutha samhitha*, *Ashtangahridaya samhitha* to collect the data. As the secondary data sources Pubmed, ScienceDirect and Google Scholar databases were consulted using the following terms 'COVID-19', 'Elder people', 'pandemics', 'Ayurveda management'. A total of 153 articles were used in the literature study and 50 of them had to be removed due to inconsistency with the given topic. 103 articles published from 2010 to 2022, in English were included. Articles that did not include, details of COVID-19 virus, transmission of COVID-19, complications of corona infection, vaccination. Additionally, searched papers, guidelines, recordings and updated documents from different international organizations and local persons related to COVID-19 and Ayurveda management of epidemics. The study's main objective was to find out how to treat older adults from the COVID-19 epidemic by combining the concepts mentioned in Ayurveda.

## **Results and discussion**

### ***COVID- 19 According to Ayurveda philosophy***

According to Ayurveda philosophy, the pandemic situation of COVID-19 falls under the category of *Janapadaroga* (pandemics), *Maraka roga*, *Aupasargika roga*, and *Aganthuja roga*. The main symptoms of these diseases are the simultaneous spread of a large population suffering from the same symptoms. As Ayurveda had mentioned, *Adharmaya* (iniquity) is the leading cause of Epidemics. The major factors of the world, *Vayu* (air), *Jala* (water), *Kala* (seasons), and *Desha* (land) are polluted due to unrighteous rule and people becoming unrighteous. This is one of the reasons that many Ayurveda textbooks mention a chapter called *Sadvritta*. It has clearly mentioned the methods of wholesomeness life patterns and disease preventive measures. Such as procurement of medicine in their high potential phase or period well before the outbreak of the epidemic, improving immunity and strengthening the body, and moving to safe places away from the polluted environment/ air/ water are the main points mentioned in the *Sadvritta* chapter. In Ayurveda, the energy required to protect patients from diseases by increasing their lifespan is known as *Vyadhikshamathwa* (the development of immunity). By treating the patient according to this principle, many diseases can be avoided. It may define a solution for the longevity of every individual. (Chathurangani, U.M.K. et al., 2022)

### ***Impact of COVID- 19 on geriatric people***

Medical issues that may arise in older adults due to Covid-19 can be discussed under four main sections: physical, cognitive, emotional, and social. Physical activity is affected during quarantine, as well as the effect on mental health. Several studies have revealed mental health consequences of previous

interventions, such as depression, emotional disturbances, stress, low mood, irritability or insomnia, are associated with higher rates of suicide in the elderly population. (Loyola, W. S. et al., 2020) Reinforcing that being quarantined is helping to keep others safe, espousing inclusive language when talking about older adults, valuing aged people's benefactions and avoiding negative emphasis on threats could also increase the elderly's adaptability. (Webb, 2021) Quarantine of sick and healthy people, especially in epidemic conditions, causes many physical and mental impairments in the elderly. Although quarantine is accepted in Ayurveda, current studies have confirmed that it has adversely affected older people.

According to previous studies, anxiety, depression, and post-traumatic stress disorder have been reported in people who have been quarantined and infected with Ebola. In addition, being older than 60 or worrying about SARS recurrence have also been found to be risk factors in previous studies. (Jalloh, M. F. et al., 2018) In addition to the mental impact, the next thing that affects the elderly is physical impairment. They have become physically debilitated because of the lack of stimulation of the musculoskeletal, cardiovascular, respiratory and nervous systems. Physical activity is defined as any body movement using skeletal muscle that results in energy expenditure > 1.5 metabolic equivalents of task (MET), while sedentary behavior is defined as any waking behavior characterized by an energy expenditure 1.5 or less MET while in a sitting, reclining or lying posture. Physical exertion generates benefits for the physical health of elderly people, stimulating muscle contraction, energy expenditure, reducing systemic inflammation and oxidative stress, reducing frequency of chronic diseases, and geriatric syndromes like sarcopenia, osteosarcopenia and frailty. Because of this, the ancient sages have taught a pattern of behavior called *Sadvrita* (Code of good conduct for mental health and social behavior in individuals) to all children, young and old people. (Ankur, T. and Sujata, R. 2020); (Bagde, et al., 2017)

#### *Ayurveda view of aging compared with modern science*

Geriatrics (geriatrics) is a branch of medicine that deals with ageing problems and diseases of the elderly. It derives from the Greek root 'geron', older man, and 'iatros', healer. Aging is not caused by a disease but is caused by systematic structural changes during life. When looking at the Ayurveda perspectives, the *Acharyas* have mentioned it among the *Ashtanga* Ayurveda and it was given prime importance in Ayurveda. (Sadashiva, H., 2010)

According to Ayurveda getting old is called "*Jara*" and wearing "*Jiryati ithi jara*" means old. It is synonymous with "*vardhakya*" meaning to increase in age. In *susrutha samhitha* "*jara*" is classified under *swabhawabalapravritti* diseases. (Buddhadasa, 1962) According to the modern biological theories of aging categorized in to programmed aging theory and damage/ error aging theory. The programmed aging divides again as, Programmed longevity, Endocrine theory, and Immunological theory. Damage theory has divided as Wear and tear theory, Rate of living theory, Cross-linking theory, Free radicals theory, and Somatic DNA damage theory. (Jin, K., 2010)

Generally, gradual development of the body is shown up to 60 years. After the age of 60-70 years, the body's elements, senses, energy, etc. begin to degenerate. (Rajoriya, R. & Nathani, S., 2016) (Table 1)

*Vridhava* or old age is one who has already reached old age. *Acharya Charaka* considers age above 60 years old, but *Acharya Susurtha* and *Vagbhata* consider it as age above 70 years. However, aging is characterized by loss of tissue, organ strength, physical strength, vitality and daily enthusiasm (*haani*). And there are secondary disorders like wrinkles, grey hair, baldness, cough, shortness of breath, and inability to perform all activities. According to *Acharya Vaghbha*, *vata dosha* is predominant in old age and is also considered the harm stage. Therefore, excess catalytic activity will occur in the body leading to many chronic diseases such as dementia, Parkinsonism, high blood pressure and cerebrovascular disease. By following proper *Swasthavritta* principles such as, *dinachaya*, *rithucharya*, avoiding suppressing urges and following *Rasayana* therapies, health can be preserved and aging-related problems can be delayed.

### **Ayurveda Managements for Epidemic Diseases in Geriatric people**

The Ayurveda classics have mentioned the diet (as a protein base diet) and drug formulation with,

- *Snigdha* (unctuous)
- *Sukravaradhaka* (aphrodisiac)
- *Ojovardhaka* (increasing the vitality)
- *Jwaraghna* (antipyretic)
- *Vishanāshaka* (anti- poisonous)
- *Rasayana* (immune modulation)
- *Tridoshasāmyakara* (balancing the harmony of body humour)
- *Manoprasadana* (psychotropic)
- *Sarvasātmya* (homologous to body) qualities
- *Satvāvajaya Chikitsa* (behavioural therapy and psycho-somatic management) will be useful in the management of Pandemic diseases. Thus per as COVID -19 condition can be used these criteria to cure and protect elder people.

Ayurveda management procedure of Aging denoted that,

- Initially, recommends *Vayasthapaka* drugs (age stabilizers) to combat aging and its negative effects
- The second approach is rejuvenating the aged body with *Jeevaniya* drugs (vitalizes)
- Third approach, *Jara* therapy or *Rasayana* therapy (Rejuvenating process and formulations) have been advised to implement the therapeutic system of geriatric management.

Also elaborated in *Rigveda* and *Atharvaveda* under the name *Rasayana*, as *Soma* etc. *Rasayana* primarily boosts *oja* (the vital force of life - the immune system) and helps a person maintain good health. Experimental studies on various *Rasayana* drugs prove that they have immune-stimulating, antioxidant and anti-stress properties.

The word *Rasayana* is formed by combination of two roots 'Rasa' and 'Aayana'. *Rasa* has several meanings like *Rasa dhatu*, *Ahara rasa*, *Shad rasa* etc. But here it can be taken as *Rasa dhatu* and the word *Aayana* means 'movement/circulation', meaning *Rasayana* is a dynamic process of nourishing the body with properly arranged *dhatu*s and produced in optimum quality and quantity. Then increases the vital process and prevents the degenerative process. (Trikamaji, Y. & Kavyathirtha, N. R., 2012) *Acharya Sushruta* defined *Rasayana* as *Vayasthapaka*, which reverses the aging process (increases the longevity of life) (Trikamaji, Y. & Kavyathithirtha, N. R., 2012). *Acharya Sharangdhara*, *Rasayana* has be defined as the one of cures diseases arising from geriatric age. *Aharya Charaka* gave prominence to *Rasayana* and mentioned it in detail. According to the *Acharya Charaka*, *Rasayana* is mentioned as the measure by which one gets *Rasa*, *Rakta*, and *Dhatu* in their best condition. The *Rasayana* is maintaining youthfulness that increases longevity, develops *Smriti*, *Medha*, helps to maintain health (*Arogya*) and improves *Prabha*, *Varna* etc. (Trikamaji, Y., 2014) *Sushruta* has defined *Rasayana* as the therapy, which establishes the age (*Vayasthapana*), increases the life span (*Ayuskara*), intelligence (*Medha*) and strength (*Bala*) as well as it enables the person to rid of the diseases.

*Rasayana* acts in various ways. Improves micro-circulation and has been reported that the "Rasayanas" are rejuvenators. Nutritional supplements possess strong antioxidant activities. They also exert antagonistic action on oxidative stressors, giving rise to the formation of different free radicals. They are used mainly to combat the effects of ageing, atherosclerosis, cancer, diabetes, rheumatoid arthritis, autoimmune disease and Parkinson's disease. The *Rasayana* herbs seem to operate through immuno-stimulant, immuno-adjuvant, and immuno-suppressant activities or by affecting the effector arm of the immune response. Mechanisms of immunomodulation activity occur mainly via phagocytosis stimulation, macrophages activation, immuno-stimulatory effect on peritoneal macrophages, lymphoid cells stimulation, cellular immune function enhancement and nonspecific cellular immune system effect, antigen-specific immunoglobulin production increase, increased nonspecific immunity

mediators and natural killer cell numbers, reducing chemotherapy-induced leukopenia, and increasing circulating total white cell counts. (Rajoriya, R. & Nathani, S., 2016)

Especially geriatric patients should have been given special care during the pandemic season. As well as their natural living time. Ayurveda has mentioned that keeping the lifestyle as close as possible to the ideal prescribed by Ayurveda, such as following up *Dinacharya*, *Rithucharya*, *Achara rasayana*, *Sadvritta* etc., utilization of *Rasayana* regularly, aggravating causes in old age such as *kshaya* (degeneration) and *vata* aggravation should be avoided such as excessive physical and mental activity, strenuous exercise, tolerance of insuppressible urges, intolerance of suppressible urges etc. *Panchakarma* and *Yoga* are proven to be efficacious in many chronic health problems of elderly people. (Rajoriya, R. & Nathani, S., 2016)

As mentioned in the basic texts and comparison with the modern views, the concept of *Vyadhikshamatva* in Ayurveda can be used to prevent the deficiency of immunity in Epidemic diseases. As well as it can cooperate with elder people who have poor in immunity. The *Nirukti* of the *Vyadhikshamatva* implies “*Vyadhi*” means non-equilibrium of the *dosha*, *dathu*, *mala* of the body and “*Kshamatva*” means to suppress or overcome. (Marsram, et al., 2014) *Vyadhikshamatva* is illustrated as the power of resistance capable enough to check the progress occurrence or recurrence of the disease. The concept of *Vyadhikshamatva* is of tremendous importance in the daily wellness of the human body for prevention and recovery from diseases. Since older people are often immune compromised, their immunity can be boosted by providing treatment according to the *Vyadhikshamatva* concept.

When etiological factors enter the body, they tend to produce disease. Simultaneously, the body tries to defeat the disease. This power of the body is called Immunity. *Vyadhikshamatva* is not mere immunity that resists infectious agents or diseases. Rather, *Vyadhikshamatva* indicates a resistance against the loss of the integrity, proportion, and interrelationship amongst the individual's *doshas* (bio-energies) and *dhatu*s (tissues). There are three synonyms for *vyadhikshamatva*, such as *sleshma*, *ojas*, and *bala*. *Sleshma* means *kapha*, which consists of *Singdha*, *Sita*, *Guru*, *Manda*, *Slakshna*, *Mrudu*, *Sthira* gunas. *Ojas* means the essence of *dhatu*s (the body's structural elements). (Murthy, K.R.S., 2014)

The tremendous treatment for blooming *ojas* is *Rasayana* therapy. *Rasayana* drugs can enhance *vyadhikshamatva*. *Rasayana* is the way to attain excellence in all body tissue through some special measures and medicines. (Kumarasingha, 1994); (Bhagawan, 2009)

*Rasayana* drugs act at three levels such as at,

- The level of *Pōshaka Rasa* (increases nutrition)
- The level of *Agni* (increases digestion and assimilation of food)
- The level of *Srotas* (increases absorption of food from serum to various parts of the body)

Therefore the *Rasayana* is the central concept of improving *vyadhikshamatva*.

Ayurveda advises in various chapters to boost the immunity in individuals. And also, it has been consisting of several therapeutic actions with regarding epidemic diseases. Therefore these medicines can be used to build up a splendid remedy against epidemic diseases. These drugs can also be used as individual drug formulas to prevent epidemic diseases by producing good immune power in the body. (Kaushik, et al., 2018) (Murthy, 2001)

According to Ayurveda, the COVID-19 pandemic is most similar to *Rājayakshma*. Especially older people who are mostly proven by breathing disturbances during the COVID-19 pandemic can manage by means of *Rajayakshma chikitsa*. According to *charaka chikithsa sthana*, *Swedana* (heat therapy) is used for relieving painful conditions, congestion, and accelerating healing such as *Sankara sweda*, *Nadisweda*, *Upanahasweda*, *Parisheka*, and *Avagahana Swedana*. *Snehana* (lipid replacement therapy) is used in various forms orally after meals with milk, *Nasya* (nasal instillation), *Abhyanga* (massage), *Avagahana* (tub bath), *Lepa* (topical application of herbal paste), *Udvartana* (topical application of Ayurvedic powder or paste), *Bastikarma* (rectal administration) as per requirement and condition of the patients. Mild forms of bloodletting (*Shringa*, *Jalawka*, and *Alābu*) are also recommended if required.

An important aspect of *Nidana Parivarjana* (avoiding causative) is also recommended in COVID-19 and other communicable diseases by limiting exposure. (Singh, et al., 2022)

### ***Improving Immunity in the Elderly through Good Behavior According to Ayurveda***

Emotions directly affect the immune system, so the mind must be healthy. The person's actions must also be good for the mind to be healthy. In Ayurveda, primordial preventive measures are mentioned extensively to achieve physical and mental relief. Among them, *dinacharya* (day regimen), *ratricharya* (night regimen), *ritucharya* (seasonal regimen), *sadvritta* (good conduct), and *āchararasayana* (promote ethical practices) are most predominantly discussed. (Bhagawan, R. K., and Sharama, D., 2009a) As well as proper dietary habits such as *Ashtawidha ahara visheshāyatana*, *Naimittika rasayana* (rejuvenation therapy for specific disease), and age-specific *rasayana* are also included as primary preventive measures. Secondary prevention is achieved through *nidanaparivarjana* (avoiding etiological factors) and different types of therapies such as *samtarana* and *aptarana* and avoiding different modes of transmission of *aupasargikaroga* (Bhagawan, R. K. and Sharma, D., 2009b) (Bhagawan, R. K. and Sharma, D., 2009c) *Sushruta samhitha* has mentioned the use of uncontaminated herbs and water, *sthanaparityaga* (boycotting those places in cases of *epidemic*) as a preventive measure. But boycotting may not be suitable for geriatric people. Loneliness causes them many diseases. (Buddhadasa, 1962)

*Sadvritta* is the most important behavioural modification for ill people as well as healthy people to cure and prevent diseases. (Kumarasinghe, 1996) Therefore, Ayurveda advocated *sadvritta*, which controls the virtuous's three folds (mind, body, and word). *Sadvritta* has defined as a non-pharmacological intervention to prevent Epidemics. “*Sad*” means good and “*Vritta*” means conduct or behaviour or habits includes in our daily regimen. Therefore, *Sadvritta* can be defined as a code of good conduct for individuals' mental health and social behaviour. These rules are very important in preventing diseases and promoting ideal health. These code conducts are classified into five groups. Such as, *Vyavaharika sadvritta* (Ethical codes of conduct), *Samajika sadvritta* (Social codes of conduct), *Manasika sadvritta* (Mental codes of conduct), *Dharmika sadvritta* (Moral codes of conduct) and *Sharirika Sadvritta* (Physical codes of conduct). (Table 2) (Ankur, T. and Sujata, R., 2020) (Bagde, et al., 2017)

*Sadvritta* is a non-pharmacological preventive approach for a healthy life that mentioned good conduct for positive well-being. The code of conduct mentioned in the *Sadvritta* increases the *sattva guna* which increases the potency of the body and mind. *Sadvritta* increases disease resistance and helps the elder individual to fight the disease mentally and physically.

The action that occurs in the body while following *dinacharya* can be described as preventive and promotion action. (Table 3) (Kaushik, et al., 2018) (Murthy, 2001) According to *Dinacharya*, *Brahmamuhurta jagarana* (early rising) is when a person wakes up in the morning, the oxygen in the atmosphere is easily inhaled and easily mixes with haemoglobin to form oxy-haemoglobin. It rapidly nourishes distant tissues. Exposure to bright light early in the morning triggers the release of serotonin, which contributes to feelings of well-being and happiness, and keeps a person active and alert. Early morning impurities are minimized and concentration of the mind is developed. Therefore, waking up early avoids many of the difficulties associated with breathing in the elderly.

*Ushnodaka pāna* (drinking hot water) is essential for maintaining urination and gastrointestinal function. Proper energy is developed throughout the body and enhances immunity. *Mala tyaga* is the evacuation of digested food waste from the rectum. A healthy person should get rid of natural desires properly. It is useful in increasing the power of digestion and prevents various diseases. Especially in elderly people the probability of *Vatakopaya* is high as *Vata Dosha* is predominant. Therefore, it is very important to avoid *vatakopakara* factors. *Malasangraha* is one of the main causes of *Vata kopakara* factors. Therefore, it is very healthy if elders do bowel movements early in the morning. Drinking warm water makes easier to bowel movements.

*Netra prakshalana* (washing eyes) prevents the eye diseases such as *netrābhishandya*, *dantadhavana* (tooth brushing), *jihva nirlekhana* (tongue cleaning), *sneha gandusha* and *kavala dharana* are most effective to cleanse the mouth and throat. Most effective activities for the manifestation of infections that are transmitted through the mouth. It also increases appetite as it reduces *mukhamalinatha*. Especially in old age, due to lack of the *Jatharagni* there is reluctance to eat. It gradually destroys the body energy and increases the possibility of illness. Therefore, brushing the teeth, rinsing the mouth, and brushing the tongue by using herbal powders, herbal liquids become healthier.

Application of *anjana* in the eyes help to evacuate the debris in the eye and increases the eyesight. Applying *nasya* is effective to evacuate waste products and foreign materials from the nasal cavity. As well the olfactory nerve endings are stimulated by *Nasya dravyas* and send the message to the CNS and initiate normal physiological functions. Using *dhumapana* has given more benefits. During the *dhupana*, drugs are lightened with fire, and CO<sub>2</sub> has released with smoke. The carbon atom in CO<sub>2</sub> tends to stimulate the respiratory center located in the brain stem which may stimulate the normal physiological function of the respiratory system. It strengthens the lungs.

Using *abhyanga*, the massage enhances the overall blood circulation and transports the potency of drugs to the desired part. As well triggers the acupuncture points and induces endorphins secretion. It shows an analgesic effect. The *snana* is good for strengthening the body and removing impurities from the body. Contagious diseases are subsided by bathing. Following the *sandhyopasana* contributes to mind relaxation, concentration, and cognition. It helps to reduce *thamasika*, *rajasika* qualities of the mind and increases *sathvika* quality of the mind. It will cause to trigger natural immunity. (Kaushik,et al., 2018)

#### **Specific dietary regimens for elders according to Ayurveda explanations**

Older people have weaker *agni* than normal people, so they need to be more careful during the change of seasons. Therefore, one should be more careful in choosing food. Following the diet mentioned in Ayurveda can be taken as the most beneficial answer for geriatric people. Foods and beverages are the other most important factor to protect body strength and immune power. In order to protect the body's energy and fight against diseases, eating should be done systematically from childhood. It has been highly analyzed according to *Ritubheda* in Ayurveda.

According to the Ayurveda perspective, foods should be taken in proper quantity. This quantity of food depends on the power of digestion. In Ayurveda, it is defined as *mithabhojana*. *Mithabhojana sewana* is most beneficial for all individuals. *Bala*, *Varna*, *buddhi*, *thushthi*, *prushthi*, *sukha* and *ayusha* are benefits of *mithabhojana swena*. If it is used as a daily routine, the articles maintain health and prevent unborn disorders. *Shali* rice, pulses, *saindhava lavana*, fruits, fresh water, milk, ghee, and honey should be consumed daily and is caused to the prevention of diseases and health. (Kumarasinghe, 1991)

Wholesome foods are responsible for the long life of living beings, can be perceived directly, form the fuel for the digestive fire, promote positive mental health and *ojas*, and nourish *saptha dhathu*. Using water gives moisture. And salt causes liquefaction, moisture and makes things less viscous. *Kshara* can improve digestive power. Reconstructing ruptured tissues by honey, ghee produces unctuousness and oiliness, milk gives to body invigorates, enlivens, improves life, and saves lives. *Mansa* nourishes the body, and wine cause flabbiness and fragility. *Seedhu* type of wine cause emaciation, grapes vine stimulates appetite, all of the *phanita* helps to accumulate *doshas*, black gram soup increases the bulk of feces, due to alkaline impaired vision and reduces semen. Except for pomegranate and Indian gooseberry, all sour tasted food and beverages are increased *pitta*. Except for honey, old rice, *shastika shali*, barley, and wheat, all dates of sweet-tasting substances generally aggravate *Kapha*. Expect the sprouts of *vetra* (*Salix caprea* Linn.), *Guduchi* (*Tinospora cordifolia* Miers.), and leaves of *patola*, all bitter substances aggravate *vata* and *avrushya*. Except for *Pippli*, and ginger, the pungent taste aggravates *vata* and *arushya*. Therefore, various *Ācharyas* have prescribed suitable foods and drinks



for each *Rithu* according to the characteristics of the *Rithu*. It is possible to maintain good health by consuming foods in moderation and can prevent Epidemics. (Kumarasinghe, 1991)

According to the *Acharyas* opinion, Epidemics are most vulnerable to occur during season-changing periods (*Ritusandhi*). People should maintain a careful diet plan during this period. Most probably during *Uttarayana* (northern solstice) should be taken *katu, tikta, kashaya rasa* foods. During *Dakshinayana* (southern solstice) should be taken *madhura, amla, lavana rasa* foods. (Murthy, 2001) Homeostasis is the balance of the body's internal environment and is a dynamic balance, not a static balance. This balance is influenced by the external environment. The internal environment of the body changes due to the changing external environment, therefore the importance of maintaining balance with nature is inevitable.

Ayurveda deals with living things holistically with an emphasis on maintaining health rather than treating illnesses. (Sharma, P., 2014) It focuses more on disease prevention than cure. That is why many *Acharyas* have referred to *rithucharya, sadvrutha, and dinacharyas* as techniques of adaptation to life for individuals. According to the *Charaka Samhita* there are seven dietary guidelines. Such as *mithabhojana swena*, time, place, preparation, surrounding people, peaceful eating, and Mindful eating. People should give attention to these seven criteria during taking food. *Kala*/time is the most important factor affecting epidemics. *Kala* has a direct relationship with *rithu*. If the *rithucharya* is followed correctly, the *Kala Dushi* effect can be tackled effectively. According to *ritucharya*, the diet should also be correct. Human strength and digestibility have changed in different seasons.

According to Ayurveda, there are two main solstices. For example, *Utharayana* (northern solstice) and *Dakshinayana* (southern solstice). During the *sisira* and *hemantha* season, people are strong and digestive power is also very strong. This is why we have to feed them *madhura, amla, lavana* rasa foods. In addition to fatty meat soup, wine from animal meat is made with jaggery, food made from flour, black seeds, products from sugarcane and milk, and food made from freshly harvested corn, muscles, fat and edible oil could be used. Warm water should be used as treatment. These are some of the dietary habits during the *hemantha* and *sisira* seasons.

In *vasantha rithu* food should be *Kaphagna* which is easily digestible dry (moisture-free-fat) one-year-old barley, wheat, honey, meat of animals of the desert-like land, meat roasted in fire, juice of mango fruit mixed with fragrant substances in the company of friends, Beverages such as *Asava* (fermented infusion), *Arista* (fermented decoction), *Sidhu* (fermented infusion), *Mrudvika* (fermented grape juice), *Sarambu* (extract of trees such as *asana, candana* etc.), Water mixed with honey, Water boiled with *Jalada* (musta-nutgrass) are indicated. Foods that are hard to digest and cold, fatty foods, sour foods, and sweet foods like *kaphawardhaka* foods are contraindicated in *vasantha* season.

Especially in *greeshma rithu* foods should be light (easy to digest), fatty, cold, liquid, corn flour mixed with cold water, sugar should be taken after taking bath in cold water, boiled rice which is white (like milk rice) along with animals of the desert, *mamsa* rasa which is not very thick, *rasāla* (curds churned and mixed with pepper powder and sugar), *Raga* (syrup, which is sweet, sour and salty), *Khandava* (syrup which has all the tastes, prepared with many substances), *Pānakapanchasāra* (Syrup prepared with Grapes), *Madhuka* (Indian liquorice), *Kharjura* (dates), *Kasmarya* (Gemelina arborea), very cool water which kept in mud pot along with flowers of *Pātalā* (*Stereospermum suaveolens*) and *Karpura* (Camphor) as a drink, food articles like *Sasankakirana* (hollow, finger-like fried pastry made of corn flour) should be taken at night, Buffalo milk mixed with sugar and cooled by moonlight and stars for drinking is indicated in *greeshma rithu* and *madya* is contra indicated in this season.

*Sarath rithu* foods should be predominately sour, salty, unctuous, dry, mixed with honey, easily digestible old grains, meat juice processed with spices, the meat of animals of desert-like lands, soup of pulses, wine prepared from grapes, fermented decoctions which are old *Mastu* (White-thin water or curds) processed with more of *sawwarcha lavana* (sochal salt) and powder of *panchakōla*. Rain water or water from deep wells should be properly boiled before drinking is advocated in *varsha rithu* and

river water, *udamantha* (a beverage prepared with flour of corn mixed with ghee) is contraindicated. Foods consist of bitter, sweet, astringent, and easily digestible such as rice, green gram, sugar, gooseberry, point gourd, honey, and meat of animals in desert-like land are good for *sarath ritu*. Alkaline foods, satiation with a hearty meal, curds, oil and muscle fat, and strong liquors are contraindicated in the *sarath rithu*. (Srikathamurthy, 2005)

For the most part, seasonal changes are controlled by changes in the levels of various hormones in the immune system, particularly melatonin. Serum levels of melatonin were found to be highest in the winter months in both normal individuals and SLE patients. There is a natural increase in *bala* (strength/immunity) of individuals during winter, for example, *hemantha* and *shishira ritu*. (Nathani, 2020) The food according to *rithucharya* should be taken care of during the *ritusandhi* period. Because it is the most sensitive period for the transmission of Epidemic diseases. People should take *rasayana*, *balya*, *jeewaniya ahara*, and medicines to improve immunity and body strength during this period.

### **Yoga for augmenting immunomodulation in geriatric people**

*Yoga* is mentioned to have a positive impact on the immune system and inflammation pathways. (Harichandra, B. P. et al., 2019) (Naoroibam R, et al., 2016) It reduces inflammation and increases the number and activity of natural killer cells, thus enhancing cell-mediated cytotoxicity of invading infective agents. (Vijayaraghava, A. et al., 2015)

Evidence shows that yoga practice is associated with increased CD3+ and CD4+ cell counts, salivary cortisol levels, and IgA, a major player in innate immunity present in body mucosa such as the lungs and gastrointestinal tract. With yogic intervention, IgA levels increase at the exposed lung margin, and type II pneumocytes are abundant. Additionally, cortisol, which dampens the body's ability to fight infection, is decreased by practicing yoga. The cytokine storm unleashed by the body's unregulated response to SARS-CoV-2 induces multi organ damage, resulting in high morbidity and mortality. Myocarditis with severe refractory acute heart failure has been noted. As myocarditis is a clear signal for cytokine-mediated damage, direct damage by the SARSCoV-2 virus cannot be discounted, as both the heart and vascular endothelium express the ACE2 receptors that are entry gates for COVID-19. Cytokine profiles in patients diagnosed with COVID-19 showed marked elevation of T-helper lymphocyte type 1, IFN- $\gamma$ , and inflammatory cytokines IL-1 $\beta$ , IL-6, and IL-12 for at least 2 weeks after disease onset. (Basu-Ray, I. et al., 2022)

Previous research studies revealed that yoga is the most effective treatment for reducing anxiety, immune deficiency diseases as well as chronic non-communicable diseases. (Table 4)

From a public health perspective, yoga can be introduced to adults as a low-cost, non-invasive strategy to alleviate the physical and psychological harm caused by the COVID-19 pandemic. Yoga exercises can be performed at home in accordance with social distancing guidelines, and the results of an 8-week yoga intervention (*asana*, *pranayama* and meditation) showed that yoga was more effective than medical treatment in reducing anxiety. Relaxation techniques such as yoga and meditation can help manage chronic or long-term stress by regulating cytokines, thereby helping people overcome disease-related co-morbidities and improve their quality of life. It is important in COVID-19 and post-COVID diseases. (Basu-Ray, I. et al., 2022)

### **Conclusion**

According to the data compiled by the World Health Organization, most of the people who died due to Covid-19 in the previous eras were elderly people over 65 years old. This shows that geriatric people are not as resilient as other people in society. Therefore, in order to protect the elderly people from severe epidemics such as Covid-19 that may occur in the future, as a response, from a young age, according to Ayurveda principles, *Dinacharya*, *Rithucharya*, *Sadvrutta*, *Achara Rasayana Krama*, *Rasayana Karma*, and *Yoga* should be carried out to bring physical and mental health. Ayurveda

treatment not only helps in curing diseases but also in preventing diseases and also helps in attaining *uttama ayusha* or longevity. Hence Ayurveda has always dealt extensively with the prevention of diseases. The collected data has discovered the main four points for managing geriatric people in an Epidemic situation. Such as preventive methods, therapeutic methods, dietary regimens, and behavioral routines. As preventive methods *dinacharya*, *rithucharya*, *achara rasayana*, and *sadvritta* are mentioned under primordial preventive methods in Ayurveda classics. As the therapeutic methods commonly used *panchakarma* procedures as well as *rasayana karma*. Instead of that, *lehana karma*, *ojowardhaka cikithsa*, *sukrawardhaka chikitsa*, *Abhishanghaja jwara chikitsa*, *visha chikitsa* are also used as a treatment for Epidemic diseases. *Rasayana guna* drugs act as primary defense medications for epidemic diseases. The *shodhana karma* eliminates the vitiated *doshas* from the human body and prevents the recurrent occurrence of diseases. And also the dietary regimens and behavioural manners which are explained in the text are best for preventing and curative methods of Epidemic diseases. All of *chikithsa karama* have manifested enhancing immune power, empowering the *Jatharagna*, and preventing risk factors that promote the epidemic diseases. Therefore, before the body becomes weak, the practices mentioned in Ayurveda should be followed to strengthen the body and mind.

## References

- Ambicadutt, S., 2002. *Susrut samhitha, Sutrasthana, 35/34-36.p.134-135*. Varanasi: Chaukhamba Sanskrit Sansthan.
- Alder, T., 2007. *Scribd*. [Online] Available at: <https://www.scribd.com> [Accessed 13 December 2013].
- Ankur, T. and Sujata, R., 2020. Sadvritta: A non- pharmacological intervention for preventive. *Journal of Natural and Ayurvedic Medicine*, 4(4), pp. 1-6.
- Bagde, et al., 2017. Sadvritta (code of right conducts) in Ayurveda. *World Journal of Pharmacy and Pharmaceutical Sciences*, 6(7), pp. 449-458.
- Basu-Ray, I. et al., 2022. A narrative review on yoga: a potential intervention for augmenting immunomodulation and mental health in COVID-19. *BMC Complementary Medicine and Therapies*, 191(2022), pp. 1-13.
- Bhagawan, R. K. and Sharma, D., 2009b. Eng. Translation on Charaka Smahitha. In: *Volume I, Suthra sthana, chapter 23, verse 8-33*. Varanasi: Chaukhamba Sanskrit Series Office, p. 3323.
- Bhagawan, R. K. and Sharma, D., 2009c. Eng. Translation on Charaka Samhitha. In: *Vol. II-2, Vimana Sthana, Chap. 3, verse 21-22*. Vranasi: Chaukhamba Sanskrit Series Office, p. 3323.
- Bhagawan, R. K., and Sharama, D., 2009a. Eng. Translation on Charaka Samhitha. In: *Volume I, Sutra sthana, Chapter 7, verse 53*. Varanasi: Chaukhamba Sanskrit Series Office, p. 3323.
- Bhagawan, S. &, 2009a. Eng. Translation on Charaka Samhitha. In: *Sutra sthana, Chapter 6, verse 8-46*. Varanasi: Chaukhamba Sanskrit Series Office.
- Buddhadasa, R., 1962. *Sinhala Translation on Susrutha Sahitha, sutra sthana, chap. 6, verse 21-22*. 1st ed. Colombo 9: Education Department.
- Buddhadasa, R., 1962. Susrutha Samhitha sinhala translation. In: *Suthra sthana- Chap.Vyadhisamuddeshiya; verse 7*. Dematagoda: Education Publication Department, p. 107.
- Chathurangani, U.M.K. et al., 2022. Ayurveda perspective of management of pandemics with concerning dinacharya. *GARI International Journal of Multidisciplinary Research*, 9(1), pp. 158-177.
- Chen, P. J. et al., 2017. Effects of prenatal yoga on women's stress and immune function across pregnancy: A randomized controlled trial. *Complementary Therapies in Medicine*, Volume 31, pp. 109-117.
- Gaur, V., 2010. *Astangahridayam by Vagbhata(Sutrasthana). English translation of Samvartika commentary as ajayostsana commentary*. 1st ed. Varanasi: Chaukhamba Orientalia.
- Harichandra, B. P. et al., 2019. Effect of yoga on immune parameters, cognitive function and quality of life among HIV- positive children/adolescents: a pilot study. *Int J Yoga*, 12(2), pp. 132-138.
- Jalloh, M. F. et al., 2018. Impact of Ebola experiences and risk perceptions on mental health in Sierra Leone, July 2015. *BMJ Glob Health*, 3(2), pp. 1-11.
- Jin, K., 2010. Modern Biological Theories of Aging. *Aging and Disease*, 1(2), pp. 72-74.
- Joy, J. E., 2023. *The Ancient Ayurveda*. [Online] Available at: <https://theancientayurveda.com> [Accessed 5 January 2022].
- Kaushik, et al., 2018. Role of Ayurvedic dinacharya in promotion of health. *Journal of Vishwa Ayurved Parishad*, pp. 30-35.
- Kumarasinghe, A., 1991. Charaka Samhitha Sinhala Translation. In: *Charaka Samhitha First volume*. Nugegoda: Department of Ayurveda, p. 1026.

- Kumarasinghe, A., 1991. Charaka Samhitha Sinhala Translation. In: *Charaka Samhitha First volume, Su. 5/8*. Nugegoda: Department of Ayurveda, p. 1026.
- Kumarasinghe, A., 1996. Charaka Samhitha Sinhala Translation. In: *Volume III, chikithsa sthana, chap. 3, verse 114-118*. Colombo: Department of Ayurveda.
- Loyola, W. S. et al., 2020. Impact of social isolation due to COVID-19 on health in older people: mental and physical effects and recommendations. *Then Journal of Nutrition, Health & Aging*, 24(9), pp. 938-947.
- Murthy, K.R.S., 2014. *Susrtha samhitha. Sutrasthana, Chap 15. Shloka no.41. pg no. 110*. reprint ed. Varanasi: Chaukhamba Orientalia.
- Marsram, et al., 2014. Brief review on Ayurvedic concept of immunity and immunization. *Ayurpharm Int J Ayur Alli Sci*, 3(8), pp. 230-240.
- Michopoulos, V. et al., 2017. Infammation in fear- and anxiety-based disorders: PTSD, GAD, and beyond. *Neuropsychopharmacolog*, Volume 42, pp. 254-270.
- Murthy, K. R., 2001. *Eng translation of Vagbhata's Ashtangahrida, Sutra Sthana, 2nd chapter. 5 ed*. Varanasi: Krishnadas Acadamy.
- Naoroibam R, et al., 2016. Efect of integrated yoga (IY) on psychological satates and CD4 counts of HIV-1 infected patients: a randomized controlled pilot study. *Int I Yoga* , 9(1), pp. 57-61.
- Nathani, N., 2020. *Charaka Samhita - Thasyashitheeya adyaya, p:40*. New Edition ed. Jamnagar: Charak Samhitha Research, Training and Skill Development Center.
- Olf, M. et al., 1999. Stress, depression and immunity: the role of defense and coping styles. *Psychiatry Res.*, 85(1), pp. 7-15.
- Rajoriya, R. & Nathani, S., 2016. Importance of Vayasthapana- Mahakashaya Drugs WSR to its Potential Uses In Geriatric Care. *International Ayurvedic medical Journal*, 4(4), pp. 692-700.
- Rao, R. V., 2018 . Ayurveda and the science of aging. *J Ayurveda Integr Med.*, 9(3), pp. 225-232.
- Sadana, R., 2023. *World Health Organization*. [Online] Available at: <https://www.who.int> [Accessed 1 October 2022].
- Sadashiva, H., 2010. *Vagbhata Astanga Hrudaya with sarvangasundara commentary of Arunadatta and Ayurveda rasayana commentary of Hemadri*. Reprint ed. Varanasi: Chaukhambha Sanskrit Sanstan.
- Singh, et al., 2022. Principles of Rajayakshma management for COVID-19. *Jornal of Ayurveda and Intergrative Medicine*, 13(1), pp. 1-6.
- Sharma, P., 2014. *Caraka Samhitha (text with English translation), Sarirasthana. Chapter 30. Shloka no.26. pg no. 240*. Varanasi: Chauhamaba Orientalia.
- Sharma, P., 2014. *Caraka samhitha(text Eng translation), Sarirasthana. chap 2,Shloka no. 46.pg no.418*. Varanasi: Chaukhamba Orientalia
- Srikathamurthy, K. R., 2005. *Acharya Vagbhata's Ashtanga Samgraha*. Varanasi: Chaukhamba Orientalia. Trikamaji, Y. & Kavyathirtha, N. R., 2012. *Susrutha Samhitha with Nibandha Sangraha commentary by Sri Dalhanacharya and Nyaya Chandrika Pnjika commentary by Sri Gayadasacharya: 6*. Reperint ed. Varanasi: Chaukambha Sanskrit Sansthan.
- Trikamaji, Y., 2014. *Agnivesha Charaka Samhitha with Ayurveda DIpika commentary by Chakrapanidatta: 376, 377*. Reprint ed. Varanasi: Chaukambha Subharati Prakashan.

Trikamji, Y. & Kavyathirtha, N. R., 2012. *Susrutha Samhitha with Nibandha Sangraha commetary by Sri Dalhanacharya and Nyaya Chandrika Panjika commentary by Sri Gayadasacharya: 49*. Reprint ed. Varanasi: Chaukambha Sanskrit Sansthan.

Vijayaraghava, A. et al., 2015. Efect of yoga practice on levels of infammatory markers after moderate and strenuous exercise. *J Clin Diagn Res.*, 9(6), pp. 08-12.

Webb, J., 2021. Covid-19 lockdown: a perfect storm for older people's mental health. *Journal of Psychiatric and Mental Health Nursing*, 28(2), pp. 300-300.

WHO, 2019. *World Health Organization*. [Online] Available at: <https://covid19.who.int> [Accessed 31 December 2019].

Yadav, R. K. et al., 2012. Efcacy of a short-term yoga-based lifestyle intervention in reducing stress and infammation- Preliminary Results. *The Journal of Alternative and Complementary Medicine*, 18(7), pp. 662-667.

**Appendix**

Table 1 Human life classification according to Ayurveda

Source	Classification name	Age	Description
Charaka samhitha (Kashinath, S. and Gorakhnath, C., 2001)	<i>Bala</i> (Childhood)	up to 16 years	<i>Dhatus</i> are in developing stage and unstable mind remains up to 30 years
	<i>Madhyama</i> (Middle age)	from 16 to 60 years	Strength, energy, virility, powers, acquisition of all <i>Dhatus</i> having reached the normal limit associated with proper physical and mental strength, without degeneration in qualities of <i>Dhatus</i> with a predominance of <i>Pitta</i> and is up to 60 years
	<i>Jirna</i> (old age)		Diminution of <i>Dhatus</i> (tissue elements), strength of sense organs, energy, manliness, valour, power of understanding, retention, memorizing, speech and analyzing fact. There is gradual diminution in the qualities of <i>Dhatus</i> and dominance of <i>Vata</i> .
Susrutha samhitha (Ambicadutt, S., 2002)	<i>Balya</i> (Childhood or early young age)	Up to 16 Years	<i>Ksirapa</i> - only milk consumption – up to one year, <i>Ksirannada</i> – milk and solid food – up to two years, <i>Annada</i> - Only solid food –more than two years up to 16 years.
	<i>Madhya</i> (Middle age or Young age) <ul style="list-style-type: none"> <li>• Growth (<i>virvardhamana</i>)</li> <li>• Youth (<i>yauwana</i>)</li> <li>• Maturity (<i>Sampurnatha</i>)</li> <li>• Decline (<i>Parihani</i>)</li> </ul>	More than 16 years up to 70 years of 16-20 years 20-30 years 30-40 years More than 40 to 70 years	With full growth of tissues, sense, faculties, strength and vitality.

	<i>Vridhdha</i> (old age)	After 70 years	Witnessed by degeneration of tissues started along with diminution in the tissues, sense faculties, strength, vitality, grey hairs, baldness, suffering from cough, dyspnoea, etc., and inability to perform all activities.
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Table 2 Description of Sadvriddha

<b><i>Vyavaharika Sadvriddha</i></b>	<b><i>Samajika sadvriddha</i></b>	<b><i>Manasika sadvriddha</i></b>	<b><i>Dharmika sadvriddha</i></b>	<b><i>Sharirika Sadvriddha</i></b>
Always speak the truth	Speak softly	Try to understand the real divine.	One should worship gods, cows, Brahmans, elderly people, and teachers.	Daily Application of oil to head, ear, nose, and feet
Take care of the elderly like fathers, mothers, and teachers	Do not insult anyone.	One should not live under continued grief.	One should honor fire.	Use prayogika dhumpana mention in ritucharya.
Do not harm anyone.	Not having a habit of breaking rules.	One should always be confident	One should not excrete sputum, fecal, and urine in front of the fire, water, the moon, the sun, and brahmanas.	Do not clean or enter own finger into the nose.
Observe self-control.	Not cough and sneeze without proper cover the nose and mouth		One should not urinate on roads, in crowded places, and while taking food	Cut nails and hair thrice a fortnight.
Speak pleasant and sweet words	Never insult the brahmans who are superior in modesty, intellect, and age.		One should not urinate on roads, in crowded places, and while taking food	Not eat food without clean hands or maintain hand hygiene.
Do not get addicted to sensory pleasures	Speak politely with teachers, elders, and intelligent people.		Perform religious sacrifices, donates, and offers.	Not eat without indulging mentally in food.
Behave according to				Not eat food that is given by infected people or



the time and place where you are residing				people who do not maintain hygiene.
Should be devoted to teachers				Always wear good clothes, and use fragrance
				The dress should be gentle.
				Do not indulge in excessive sleep, drinks, and food.
				One should not perform sexual intercourse with a woman having menses or some disease.
				One should not eat without washing hands, feet, and face, with an unclean mouth and without taking bath, without reciting the mantra, and without making an offering to the forefather.
				One should not eat on unclean plates, in an improper place, untimely, and crowded places.

Table 3 The effect of Dinacharya

Activity	Effect on dosha	Prevention of	Promotion of
Early rise	Vatanulomana Kapha shamana	Constipation Flatulence	Ayu, Agni, Dhee, Dhritho, Smruti
Jala pana	Pitta shamana	Amlapitta	Digestion, kidney function
Shaucha, dhanta dhawana and jihva nirlekhana	Tridosha shamana	Mukha malinta, Durgandha, dantha roga, Mukha roga, Alasya, Angamarda	Dantha dhridruta, Mukha shuddhi, Jihva shuddhi, Bhojana
Jala neeti	Kapha shamana	Whiting of hairs, wrinkles, cough	Medha, Smriti Eyesigh
Anjana	Akshigata dosha shaman	Timira, stress on eyes	Clarity of vision
Nasya	Kapha shaman Vatanulomana	Urdhva jatrugata vikara (diseases above the clavicle)	Eyesight Voice Glow of face
Nasya,Gandusha, Kavala	Kapha shaman	Durganthta, Arochaka, Dryness of mouth, Dryness of lips, Dant roga, Mukha roga	Oral health
Doompana roga	Urdhvajatrugata Kapha-vata	Prevents disease above the clavicle	-
Tambula sevana	Vata shaman	Hrid Roga	Mental health
Abhyanga,	Vata shamana	Angamarda, Glani, Sandhi Shool, Anidra	Skin glow and softness, Sarira dadhya, Samhanana
Vyayama/ shankramana	Tridosha shamana	Sandhi vata, Heart disease, obesity	Lightness of body, Digestion, Strength Immunity
Udvardana	Kapha nasaka	Obesity, Compactness of body & skin	Skin compactness
Snana ( Bath )	Tridosha shamana	Skin disease, Prameha, Excessive sweating, Drowsiness Thirst, Burning	Improve digestion Vrisya Aayushya Strengthen energy Utsaha, Bala
Prayer	Mansika dosha shamana	Mental disorders anxiety	Mental health
Breakfast	Pitta shamana	Amla pitta	Agni, Utsaha

Table 4 Previous research evidences on Yoga effect on the diseases

Author/Year	Sample size	Participant characteristics	Location/ Setting of study	Study design	Intervention	Result	conclusion
Agnihotri et al., 2014	276	patients of mild to moderate asthma (FEV <sub>1</sub> >60%) aged between 12 to 60 years	Department of Pulmonary Medicine, King George's Medical University, U.P., Lucknow, India	Randomized controlled trial	6-week yoga intervention (30minutes/day, 5days/week of asana and pranayama)	Decreased eosinophil and neutrophil counts among patients with asthma in yoga group	Asana and pranayama help to improve hemoglobin counts and decrease bronchial inflammation
Chen et al., 2017	94	healthy pregnant women at 16weeks' gestation	a prenatal clinic in Taipei	longitudinal, prospective, randomized controlled trial	20-week yoga intervention (60minutes/day, twice a week of asana and pranayama)	Significantly lower cortisol levels; high IgA; improvement in CD3 + and CD4 + cell counts in	Asana and pranayama bolster immune response by reducing cortisol levels and increasing IgA and CD3/4 +
Naoroibam et al., 2016	44	HIV-1 infected individuals	Two HIV rehabilitation centers of Manipur State of India	A randomized controlled pilot study	1-month yoga intervention (60minutes/day, 6days/week of asana and pranayama)	Significantly higher CD4 + cell counts in yoga group	Asana and pranayama improve immunity in HIV-1-infected adults
Kuloor et al., 2019	60	HIV-positive (aged 30-50 years)	Rehabilitation centers across Bangalore	A randomized controlled study 8-week yoga intervention (60minutes/day, 5days/week of asana and pranayama)	A randomized controlled study 8-week yoga intervention (60minutes/day, 5days/week of	Significantly lower rates of anxiety, stress, and depression in yoga group	Asana and pranayama help lower stress, anxiety, and depression levels of HIV-positive patients
Yadav et al., 2012	86	Patients with chronic inflammatory diseases and overweight/obese subjects	Integral Health Clinic, Department of Physiology, All India Institute of Medical Sciences, New Delhi, India.	Preliminary results from a nonrandomized prospective ongoing study with pre-post design.	10-day yoga intervention (asana and pranayama)	Decreased levels of cortisol, IL-6, and TNF- $\alpha$ ; increased $\beta$ -endorphin levels	Asana and pranayama reduce inflammation and stress levels over a short span of intervention