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Rasayan as a Public Health Tool at the time of Communicable Disease

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ABSTRACT

Communicable diseases are illness caused by infectious agent or its toxins that spread from an infected person to normal person through the direct or indirect transmission. In *Ayurved*, communicable diseases are clearly mentioned under a broad term *Janpadodhwansa* and *Aupasargik Roga* according to *Charak* and *Sushrut* respectively. Most of the concepts of *Janpadodhwansa* are like etiology, mode of transmission and principles of prevention of outbreak etc. Are more likely corresponding to current theories about epidemic and pandemic. Immunity of an individual plays a major role in action of the infectious agent and development of further disease. "*Rasayan Chikitsa*" is therapy which produces the best quality of *Rasaadi Sapta-Dhatu*s by increased *Agni* producing further the good quality of *Ojas*. Due to which the optimum *Vyadhikshmatva* is achieved, it further helps in controlling the disease condition. *Rasayan* also increases the longevity, mental, physical communicable diseases strength and improve quality of life. Activities of *Rasayan* botanicals on immune mechanisms and its antiviral activity provide a sound logic to use of these botanicals as a preventive major in the communicable diseases. *Rasayan* acts on both main manifestation of any diseases that is *Manasika* (psychosomatic) by *Aachar Rasayan* and *Sharirik* (body) by drug therapy. This review focuses on how communicable diseases can be prevent and control by *Rasayan* and how *Rasayan* help to improve public health. It also focuses on complications of communicable diseases which is major current challenge (in terms of Post COVID-19 syndrome) for Global Health system.

Key words: Communicable diseases, Janpadodhwansa, Rasayan, Vyadhikshmatva, Ojas, Agni

INTRODUCTION

Communicable diseases are an illness that readily communicated by transmission of pathogens like viruses, bacteria, Fungai etc. from an infected individuals, vector, animal or inanimate environment to a human host or susceptible animal.^[1] Communicable diseases transmitted by two ways either direct or indirect. In direct transmission, an infectious agent or toxin is transferred from an infected

person to a susceptible host by droplet spread or direct contact. Droplet spread refers to transmission by direct spray over a few feet, before the droplets fall to the ground. The spray can be short or large-range aerosols produced by coughing, sneezing or even talking. Direct contact occurs through kissing, skin-to-skin contact, sexual intercourse, vegetation harbouring, bodily fluids, blood products and soil infectious organisms. Transmission of an infectious agent from a reservoir to a host by suspended air particles, inanimate objects (vehicles), or animate intermediaries (vectors) is called as Indirect transmission.^[2]

In *Ayurved*, communicable diseases are clearly mentioned under a broad term *Janpadodhwansa*^[3] and *Aupasargik Roga*^[4] by *Charak* and *Shushruta* respectively. Most of the concepts of *Janpadodhwansa* like aetiology, mode of transmission and principles of prevention of outbreak are more likely corresponding to current theories about epidemic and pandemic.

There may be common factors like *Vayu* (air), *Jala* (water), *Desha* (place) and *Kala* (season) which are

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more lethal in their consecutively increasing order^[5], when contaminated, may lead to various diseases of a particular place, termed as “*Janapadodhwansa*”^[6]. *Adharma* (unrighteousness) is the root cause of vitiation of all this factors and is led by *Pragyaparadh*.^[7] “*Janapada*” refers to living beings inhabited area and “*Dhwamsa*” refers to destruction, hence the destruction of a particular habitat due to *Sankramika-Roga* is a *Janapadodhwansa*. *Janapadodhwansa* specifies the disease of large number of people within a specific region from disease probably infectious and communicable in nature.^[3]

Shushruta has mentioned the diseases which communicate from one person to another under the term *Aupasargika Roga*. *Kushtha* (skin diseases), *Jwara* (fever), *Shosha* (Emaciation), and *Netrabhishyanda* (conjunctivitis) are examples given under *Aupasargika Roga*. Different modes of transmission of disease include *Prasanga* (mutual contact), *Gatrasansparsha* (skin to skin touch), *Nihashwasa* (exhaled air), *Sahabhajana* (eating at common place), *Sahashaiya* (sharing the sleeping place), *Asana* (sitting close to each other), using *Vastra*(cloths), *Malya* (using garlands) and *Anulepana*.^[4]

As per *Shushruta*, certain diseases like *Jwara* (fever), *Kasa* (cough), *Pratishyaya* (rhinitis), *Shwasa* (dyspnoea) and *Shirhashoola* (headache) affect large number of people of a *Janapada* or *Desha* either through polluted or vitiated air or contaminated things like home, bed, seat, vehicle, gems or even through contact of females.^[8] Most of these clinical features may be observed in various infections of respiratory tract in current practices population.

Ashtanga Hridaya has been used the term *Sanchariroga* for the diseases which communicate from person to person. For example, diseases of eye and skin spread from touch, or from a common source like sharing food and sleeping closely.^[9]

The prevalence of fear of Global pandemic COVID-19 was reported to be 18.1 to 45.2%. Psychologically, this process of alteration can lead to feelings of fear, insecurity, and anxiety; as a result disease symptom worsens and result in a greater number of deaths.

According to *Charaka* depression is a leading factor in aggravation of any disease.^[10]

Effect of Communicable Diseases on Public Health

India comes acrosses a variety of epidemics and pandemics like Cholera, Influenza, Small pox and many more.^[11] However newly added infectious disease COVID-19 caused by SARS-COV-2 causing a global pandemic with millions of cases worldwide^[12] predicts a high burden of physical, neuro-psychological and social need.^[13]

Several factors like Globalisation, climate changes, urbanisation, lack of sanitation, poverty, malnutrition, lack of proper health system and immunosuppression lead to natural and easier transmission of infectious diseases in the community.^[14] Emergency condition exists, once disease established so overall goals are rapid assessment, outbreak control, surveillance, prevention and management of disease.

Importance of Immunity in Communicable diseases

The immune system plays a dual role, acting as a resistant by defending the body from infectious agents by fighting against them and acting as a tolerant by enduring the microbes present within the body.^[14]

It is found that patients with comorbidities suffer more than the healthy peoples due to low immunity level.^[15] Overall the control of infectious agent requires different specialized immune responses, depending on the host tissue and their immune response, they replicate and manifestation of severity of disease occur according to that. During the development of host protective immunity, the adaptive and innate immune systems cooperate in order to efficiently eliminate the infectious pathogens.^[16] This suggests that the body's immune system plays a crucial role in disease development.

The equilibrium state of *Dhatu* is called *Swasthya*.^[17] The person who is desirous to be healthy should adopt healthy practices related to diet, conduct, and activities. Thus, immunity can be considered in Ayurved as *Vyadhikshmatva* and *Ojas* (*Sarvadhātu Sara*); which depends on the condition of *Agni*, *Dosha*, and *Dhatu*.

The term *Vyadhikshmatva* (*Vyadhi* means disease and *Kshamatva* stands for potency or ability) is defined as the ability of the body to prevent or resist the development of the disease. The *Vyadhikshmatva* is of two types 1) *Vyadhi Pratibandhakatwa*, prevents the onset of disease 2) *Vyadhi Balanirodhakatwa*, one that withstands the virility of the disease.^[18]

So, immunity has important role in manifestation of severity in communicable diseases. High mortality among immune-compromised and those with some underlying pathology implies that the factors that improve *Vyadhikshmatva* can prevent serious manifestations due to infection. Enhancement of immunity plays an important role in maintaining optimum health and preventing such communicable diseases.^[16]

Rasayan importance in communicable diseases

Janapadodhwansa can be prevented and controlled by using *Panchakarma* i.e., purification procedures like *Vamana*, *Virechana*, *Basti*, *Nasya* and also by *Rasayana* and obeying the *Sadvritta* can be useful in the risk-prone areas to improve immunity and minimize the risk of infection.^[19] *Rasayana* helps in increasing the *Vyadhi Kshamatva* by replenishing the *Dhatus* (tissues).^[20] *Ayurveda's* insights of preventive care are based on the concepts of "*Dinacharya*"^[21] (daily regimes) and "*Ritucharya*"^[22] [(seasonal regimes). These help in maintaining physical and mental health, immunity and longevity.

Rasayana boosts the immune system by potentiating *Oja* (essence of *Dhatus*). Researchers have proved that *Amalki*, *Haritaki*, *Pippali*, *Shilajatu* increases gamma globulin which help to increase in nonspecific resistance.^[23]

Rasayana promotes nutrition by explicitly enriching the nutritional value of *Rasa* by enhancing *Agni*, i.e., digestion, metabolism, and absorption (by *Strotoshodhan*). Consequently, enhance the health of all body tissues. *Rasayan* increases the longevity, increases mental as well as physical strength, destroys the disease process and decreases the aging process.^[24] *Guduchi*, *Ashwagandha* and *Shatavari* are

known to modulate the immune system and possess antiviral activities.

Activities of botanicals on immune mechanisms provide a sound logic to use of these botanicals in Post COVID-19 Syndrome treatment. Total 31 major phytoconstituents are identified from *Tinospora cordifolia*, *Withania somnifera* and *Asparagus racemosus*. Some of the phytoconstituents have a possible role in reducing inflammatory responses which lead to arrest disease progression and prevent organ failure.^[25]

The numerous drugs which are *Rasayana* according to *Ayurvedic* texts include *Guduchi* (*Tinospora cordifolia*), *Maricha* (*Piper nigrum*) and *Amalaki* (*Embllica officinale*) useful to re-establish immune competency in conditions in severe conditions which compromise the immune system because of their immunostimulating properties which help survey and regulate the activity of NK Cells, immunoglobulins, lymphocytes (T & B), macrophages, tumour necrosis factor alpha (TNF- α), polymorphonuclear cells, and interleukins.^[26]

Medhya Rasayana in Fear of Disease

Nagarjuna has mentioned that *Medhya* drugs mainly act by their *Achintya Virya* i.e., *Prabhava*. *Medhya Rasayana* of *Madhur*, *Tikta Rasa*, *Ushna Virya* improves functional neurological disorder by nourishing five senses, *Agni Deepan*, *Strotoshodhan*. *Medhya Rasayana* drugs like *Mandukparni Svarasa*, *Sankhapuṣpi Kalka*, *Guduchi Svarasa* and *Mulethi Churna* increases power of reception and power of recalling.

Rasayan Dravya which explain how Rasayan work in Communicable Diseases:

Guduchi: *Guduchi* acts as an antioxidant and a known immunomodulator.^[27] Octacosanol isolated from the plant has been shown to act as an active anti-metastatic and anti-angiogenic.^[28]

Amalaki: The crude extracts of *Amalaki* Researches have proven the antioxidant and immunomodulatory activities. In *Ayurved* it is considered to be *Balya* means impart strength to the body. *Amalaki* is a rich source of

vitamin C^[29] which is useful to prevent systemic infection of body.^[30]

Maricha: *Maricha* is a well-known *Rasayana* which is anti-oxidant which increase the bio availability of the drug and also increases total WBC.^[31] it acts as an anti-inflammatory as piperine inhibit the expression of MMP13 and IL6 and also helps in reduced PGE2^[32]

Brahmi (*Bacopa monnieri*): *Brahmi* acts on the central nervous system and slows down the stress activity. In cases of global distress or epidemic, people usually get paranoid, so it might be helpful to reduce stress and anxiety.^[33] An in-vitro study suggests that bacoside-rich ethanolic extracts have anti-inflammatory effects.^[34]

Turmeric (*Curcuma longa*): It is one of the most important spices of India and considered as one of the *Rasayana*. Curcumin is the main polyphenol separated from turmeric are known to possess an anti-oxidant, anti-metastatic and anti-inflammatory activities as it reduces IL-1 and TNF- α .^[35] It also targets various inflammatory mediators like cyclooxygenase-2, inducible nitric oxide synthase which further diminishes the release of proinflammatory and profibrotic cytokines which suppress the free radical production which leads to ends of further tissue toxicity.^[36]

It is also act as NLRP3 inflammation activation inhibitor.^[37] It is also had a cytotoxic effect which enhance immunity through T cell stimulation along with anti-metastatic effect.^[38]

Tulasi (*Ocimum tenuiflorum*): *Tulasi* is known to be as "Elixir of life". *Tulasi* possess anti-pyretic, immunomodulator, anti-analgesic, anti-oxidant and anti-inflammatory property.^[39] The studies have shown the increase in natural killer cell and also increase in the percentage of T-helper cells after 4 weeks of intervention on healthy volunteers.^[40] The aqueous extract of *Tulasi* has inhibitory effect on polio virus type 3, enterovirus, viral encephalitis, herpes virus.^[41] In mild to moderate asthmatic patients, bronchodilator activity of *Tulasi* has also been reported.^[42]

Hot water and Copperized Water: Hot water helps in *Aam Pachana* (digestion of sludge resulting from

undigested food) which establish the *Agni* (Bio-Digestive Fire) which lead to improves immunity. Water stored in copper vessels acts as a natural antioxidant and helps balance the three *Doshas* of *Vata*, *Pitta* and *Kapha* and also help in eliminating the residing bacteria in the water.^{[43],[44]}

DISCUSSION

Rasayana can be considered as a rejuvenating approach to prevent and control a particular disease by increasing the resistance of the body toward the disease, by this we can understand *Rasayana* concept from a modern lens also.^[23] *Ayurveda* states that disease manifestations occur by two ways *Manasika* (psychosomatic) and *Sharirik* (bodily).^[45] *Rasayana* concept acts on both these aspects which is necessary during pandemic.^[46]

There are numerous numbers of infectious agents and most of the time a new virulent organism comes to affect human population, SARS and COVID-19 viruses are recent potential threat to the global public health. It takes a considerable time and resources to develop a preventive vaccine against any new infective agents. Therefore, decreasing host susceptibility towards disease, improving public health and preventing environmental transmission is essential.

CONCLUSION

Rasayan can be best Public Health tool in communicable diseases by increasing immune response of body towards disease also for complication of diseases. It also helps to improve quality of life, mental status which is essential in period of communicable diseases

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