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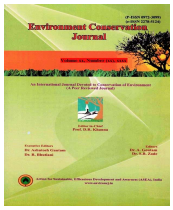

An overview of Covid-19 with special reference to Janapadodhwamsa

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ABSTRACT

Virus, bacteria and fungi are the most common causes for spreading illness in human and in animals. These are the microorganisms and they can cause epidemic and pandemic diseases. World is passing through many viral epidemics affecting respiratory system since last twenty years. It includes SARS-CoV 2002-2003, H_1N_1 Influenza 2009, MERS-CoV 2012 to the recent COVID-2019. COVID-19 is a viral pandemic infection this is air borne illness that is spreading through droplet infection. This virus especially affects the respiratory system by doing immunosuppression in person. In *Ayurveda* there are references of Janapadodhwamsa in Charaka samhita vimansthan. Janapadodhwamsa – is the term coined by Charak which means destruction of population living in same place at the same time because of 4 main reasons i.e. Dushit vayu (Air), Dushit jala (water), Dushit desh (land), Dushit kaal (time) Janapadodhwamsha causes death of individuals in the affected area inflicting huge destruction.

Introduction

Coronavirus is one of the major pathogen that targeted the human respiratory system. At the end of December month in 2019, an onset of a typical pneumonia (COVID-19) started in Wuhan, China (Gorbalenya 2020). Corona virus is zoonotic origin disease it is also known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or in general as novel coronavirus, and the disease-associated is being called COVID-19 (Lai *et al.,* 2020; Bhatia, 2020; Bedford *et al.,* 2020). Entire world was challenged with this virus and government had declared lockdowns in their respective countries, states and cities (Fisher *et al*., 2020). In India, national lockdown was announced starting from 25th March 2020. People were informed to stay at home except there will be an emergency. All travel visa were prohibited till 15th April 2020. Peoples, who came back after 15th February 2020, were quarantined for a minimum of 14 days after their arrival in country.The alarming condition arose when the community spread of SARS-CoV-2 majorly impacted the human health, economical conditions and behavioural aspect of the society (Pinto 2020; Ma *et al.,* 2020; Park *et al.,* 2019; Bherwani *et al.,* 2020).The impact of environmental factors is exceedingly related to confirming COVID-19 cases as flu virus spreads rapidly in cold and dry condition and becomes inactive above 30^{o}C (Casanova *et al.,* 2010; Doremalen *et al.,* 2013). The susceptible-exposed-infectious-recovered (SEIR models) has been reported as a successful tool to know more about the pandemic dynamics and to evaluate the impact of environmental and social conditions on the spread of COVID-19 (Chanprasopchai *et al.,* 2017; Kalhori *et al.,* 2019).

Ayurvedic concept related to Covid-19

Ayurveda is the oldest science in India, which plays a vital role in the treatment of any disease. The term

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Ayurveda is derived from two words-*Ayu* and *veda.* As per Shastri (2012) the main aims of Ayurveda are

- *Swasthasya swasthya rakshanam*
- *Aturasya vikara prashamanam*

Ayurveda is considered as pioneer of all medical sciences. Many *Samhitas* are available in Ayurveda which explain about the vyadhis, nidana, laxana, chikitsa etc. Ayurveda described *roga* into two categories (Gupta, 1997).

- *Nija roga*
- *Agantuja roga*

Many communicable diseases, their causes, mode of transmission, prevention and treatment are described in Ayurveda. These communicable diseases described in Ayurveda under Janpadodhwamsa, Aupasargika roga, Sankramika vyadhi.

Natural disaster like endemic, epidemic and pandemic diseases are described in Ayurveda under Janapadodhwasma because having similar sign and symptoms. According to Acharya charaka, any vyadhi which produce due to destruction of large population is known as Janapadodhwamsa. Janapadodhwamsa is derived from two words-Janapad and Dhwamsa. Janapad means nation, community, district, people, persons belonging to a country where Dhwamsa means destruction (Sukumar and Shashirekha, 2018). According to Chakrapani, the famous commentator of Charaka, causes for diseases are mainly of two types (Sharma and Dash, 2018).

1. *Sadharana*-These cause varies from person to person.
2. *Asdharana*-These causes are common to many person like vayu(air), Jala(water), desh(land), kala(time) etc.

Roga are due to asdharana (common) causes are called Janapadodhwamsa.

तासामुपयोगाद्विविध रोग प्रादुर्भावो मरको वा भवेदिति । (सु.सू 6/19)

Acharya Susruta has described the concept of Janapadodhwamsa while discussing Ritucharya (seasonal regimen) under the title Maraka. In these seasonal regimen abnormalities happen due to some providential causes like cold, heat, wind and rain become different from their normal qualities (Shastri, 2012).

रक्षोगणादिभिर्वा विविधैर्भूतसंघेस्तम धर्म मन्यद्वाऽप्यपचारान्तरमुप्लभ्याभिहन्यन्ते। (च.वि.3/22)

Acharya Charaka mentioned that in Janapadodhwamsa, janapad are attacked by raksasas or other micro-organisms due to unrighteousness or other unwholesome act. These acts are also responsible for people getting afflicted with the attack of raksasas. This act is the main cause of the destruction of population by curse (Shastri, 2012). According to Acharya Charaka the epidemics are caused because of dearangement of one or all the four elements shared in-common by the humans like- Vayu (Air), Jala (Water),Desha (Area),and Kala (time) (Tripathi, 2007). Authors have tried to explain the vitiation of air, water, land and time (season) in order of their importance.

Some characteristics of air which is injurious for health-(Sharma 1998)

- Excessive calmness
- Excessive dryness, cold, heat, roughness
- Excessive clashes
- Excessive cyclonic in nature

Some characteristic of water which is injurious for health (Sharma, 1998).

- Abnormality in smell, color, taste and touch
- Excessive stickiness
- Absence of birds
- Reduction of Aquatic animals
- Manifestation of unpleasantness

Some characteristic of land which is harmful for health (Sharma, 1998).

- Abnormality in the natural colour, smell, taste and touch
- Excessive stickiness
- Abundance of wild animals, mosquitoes, flies, rats, owls
- Abundance of smoke in the wind
- Abundance of excessively branched creepers
- Presence of wild cries of birds and dogs
- Presence of excessive crying noise
- Appearance of roughness and coppery, redish and white color in the sun.
- Fierce look and cries in the nature
- Constant agitation and over-flow of water reservoirs
- Frequent occurrence of thunderbolts and earthquakes

Manifestation of the characteristic features contrary to the normal conditions of the various seasons is considered to be harmful (Sharma, 1998). The impairement of these factors responsible for the destruction of countries by epidemics. By nature air, water, land and season are indispensable in their progressive order.

वय्वादीनां यद्वैगुण्यमुत्पघते तस्यमूलमधर्मः तन्मूलं वाऽसत्कर्म पूर्वकृतःतयोर्योनिः प्रज्ञापराध एव। (च.वि.3/20)

According to Acharya charaka, the main reasons for the vitations of these factors is Adharma, Poorvajanama papakarya. The main reasons leading to the same are improper disposal of waste, air pollution, distribution of contaminated water, indulgence in unhealthy and unhealthful activities. *"Pragyaparadha"* (doing mistakes knowingly/ mis-behave) is said to be the basis cause for all epidemics. It is then said to lead "*Adharma" or "Asat-karma*" (Tripathi, 2007). It can also be caused by "*Apavitrata"* (uncleanliness*),Rakshas-gana/Bhutagana* (Micro-organisms). Equal importance is given to mental unstability and "Abhishaapa" as the cause of epidemics (Tripathi, 2007). In Vatakalakaliya adhyaya, Acharya Charaka has considered vikruta vayu as responsible for alterations in normal environment or seasons, earthquake, formation of huge sea waves, and epidemics in animals and humans (Tripathi, 2007)

On the basis of nature of virus, origin of virus and considering the fatality of COVID-19 related illness. It can be considered as Jangam visha janya vyadhi and according to mode of transmission it is similar to Bhootabhisangaj Agantuj Jwar. In Ayurveda, all persons have their own Prakriti which carry on since origin to demise. All person staying in same region doesn't have an similar resistance for an similar disease. The resistance which is responsible to keep a check over intensity and progression of the disease is called as Vyadhishamatva (Immunity) (Patel *et al.,* 2017).

प्रसंगादगात्रसंस्पर्षानिःष्वासात्सहभोजनात्।
सहषय्याऽऽसनाच्चापिवस्त्र्ामाल्यानुलेपनात्।।
कुश्ठं ज्वरष्च षोशश्रच नेत्राभिश्यन्द एव च ।
औपसर्गिक रोगाश्च संक्रामन्ति नरान्नरम्।।

(सु.नि. 5/32-33)

Ayurveda is likely to provide evidence-based medicine for preventive health care and enhance the self-immunity. As Ayurveda described several immunity booster procedures in Dincharya and Riutucharya. A better prevention through Ayurveda approach can be achieved in this pandemic of covid-19 as immunity booster (Dutta and Kaviraj, 2009).

General chikitsa of Janapadodhwamsa

According to Acharya Charaka general chikitsa which are beneficial during Janapadodhwamsa include following activities-

SN	General measures in Janapadodhwasma
1-	Bheshaja prayoga
2-	Panchvidh karma (panchakarma)
3-	Rasayana sevana
4-	Deha vriti
5-	Sadvritta palan

1-**Bheshaja prayog-**During Janapadodhwamsa,we have to administered those medicines which are collected before epidemic.

2-Panchvidh karma-Panchvidh karma are the best therapy for those who are not having identical actions during the previous life and also for those who are not destined to die during the epidemics. Panchvidh karma include these therapies-

- Vamana (Emesis process)
- Virechana (Purgation process)
- Nirhu basti (Aasthapan basti-enema)
- Anuvasana basti (enema)
- Nasya karma (Shirovirechana-nasal medication)

3-Rasayana sevan-Proper administration of Rasayana should be benefical (Rasayananam vividhchupayogah prashashyate).

4-Dehavriti-Physical health of every individual should be maintained through drugs which are collected before the onset of epidemics.

5-Sadvritta palan-According to Acharya charaka implementation of Sadvritta should play a key role for living a healthy life.Sadvritta palan include-

- Satya (Truthfulness)
- Bhut daya (Compassion for living beings)
- Dana (Charity)

- Balee (Sacrifices)
- Devtaarchanam (Prayer to the Gods)
- Sadvrittasya anuvrittischa (Adoption of preventive measures)
- Prasahamo (Maintaining tranquility)
- Guptiraatmanam (Protection of self by chanting mantras etc)
- Hitam Janapadaanaam
- Shivaanaam upasevanama
- Sevanam Brahmacharyasya
- Sevanam Brahmachaarinaam
- Samkatha dharma sastraanaam maharshinaam jitaatmanaam
- Dharmikaihi sattvikaimitayam sahaasyaa vriddha samvataihi

These above therapies should be adopted during epidemics will save the life of individual (Sharma and Dash, 2018).
Acharya Sushruta also given some common treatment plan for all epidemics.These includes (Ghanekar vol. 22.)

- Sthanparityag-Leave the infected place
- Quarantine
- Hom-dhum sevan
- Niyam- cleanliness

Daivyapashray treatment –mantra chanting

As per Tripathi, (1999), Misra vol.169 and Ghanekar vol. 22. some other measures are

- Advice to follow all vyadhikshamatva
- Advice to follow dincharya according to Ayurveda
- Advice to follow dharma
- Advice people to collect food, medicine from unaffected area or before epidemic
- Prohibit vitiation of air,water,land,climate through the use of purification methods
- Dhupana- Some dravya which are use for dhupana process as follows-
  - Tulsi
  - Nimb
  - Nirgundi
  - Ajwain
  - Camphor
- Abhyanga therapy
- Rakshoghna medicine

Role of rasayana in Janapadodhawsma and their immune modulating effect-Rasayana chikitsa is the foremost treatment during this epidemic condition. Rasayana therapy plays a vital role in this epidemic because it gives strength to the body, enrich the dhatu (basic rasa dhatu and further sapta dhatus) and improve immune power (Yadav, 2014). According to Ayurveda, vyadhi is the resultant of imbalanced dosha and dushya which happen in individual who have ksheen vyadhikshamatva. So in this crucial condition of epidemic we should use those dravyas which are useful to improve vyadhikshamatva. Immune modulator are those which gives strength to the immune effector cell (Masihi, 2001). Vyadhikshamatva of every individual is depend upon dhatuposhan and oja. In Rasayana therapy,we have to work upon the Rasa, agni and srotasa level for the healthful longevity.Rasayana generally used in two ways which are as follows-

- As a prophylactic medicine
- As a preventive measures in healthy individual

1-Amalaki (*Embelica officinalis*) Amalaki is considered as a best dravya for Rasayana effect. It is also responsible for sandhaniya karma (improve cell migration and cell binding) and Ayushya (Prolonged cell life) (Sharma, 2009).
Amalaki fruit contains all five rasas except lavana which reduces the all three Doshas and balance all the Dhatus of the body.Amalaki also reduces pitta dosha because of Guru,Ruksha and Sheeta guna and also having Sheet Virya and Madhur Vipaka (Mishra, 2002). According to Acharya Charaka amalaki is the important drug and termed as "Amalaki Vayasthaapanama Shreshthama" (Yadav, 2014).

***2*-Guduchi (*Tinospora cordifolia*)** Guduchi (giloy) is one of the best Rasayana. It is also known as a *"Amrita",jwarari,tantrika,jivantika.Guduchi have tikta and kashaya rasa,guru and snigdha guna,ushno veerya and madhura vipaka.Guduchi* consist a lot of properties. These are as follows-

- Agnideepana
- Balya
- Jwaraghna
- Ama nashaka

Because of these properties Guduchi enhance the killing property of macrophages and also acts in infectious disease (Pandey, 2002; Chunekar and Pandey, 2006; Shankar and Prasad, 1998).

***3*-Haridra (*Curcuma longa*)-**All Ayurvedic literature mentioned several properties of haridra like-Rujahar (reducing pain), Daha hara (reducing burning sensation),Varnya (complexion propellant), Vishodhana (cleansing of the body), kapha pitta shamak (Diwedi, 2008).

According to Acharya charaka haritaki have five rasa except lavan rasa,and having ushna virya.It have several properties like (Sharma and Dash, 2018).

- Doshaanulomini(eliminates the dosas),
- Laghvi(light),
- Depan(stimulates the digestion),
- Pachana(carminative),
- Ayushya paushtiki (promotes longevity and nourishment),
- Sarva roga prashamni (eradicate all diseases)

Haridra act as a immunemodulator because it plays a vital role in the modulation of proliferation and cellular response of many immune cell types (Yue *et al.,* 2010). Haridra is a useful herb in Janapadodhwamsa because of its polysaccharides content which elevates the host defense mechanism.In various pre-clinical and human clinical models immunomodulator activity of polysaccharides and polysaccharides plant products have been demonstrated (Ramberg and Nelson, 2010).

Transmission of SARS-CoV-2-

This virus mainly spread through person to person. When an infected person cough or sneeze, this virus mainly spread through droplets and nasal discharge. Some other ways for the transmission of this virus are as follows (Bedford *et al.,* 2020).

- Through close contact
- Droplets
- Airborne Transmission,
- Surface Transmission
- Fecal-oral

Impact of SARS-CoV-2 On Environment-

The fecal-oral transmission was a matter of concern for the environment. Large population of developing countries was under poverty threshold, so they used open defecation. Hence, detection of SARS-CoV-2 in the human feces was an alarming threat and may cause the drastic consequences for the countries having larger slum areas. Maintaining physical distancing in slum area was the difficult problem because many persons are living in a single room (Coronavirus:2020). Some known methods for cleaning the environmental compartments include a lot of techniques. These techniques are as follows-

- Nitrifying-enriched activated sludge (NAS) approach,
- Microorganisms based approach ,
- Conventional activated sludge (CAS) approach
- These techniques were very beneficial to the environment (Poole, 2020).

Effect of COVID-19 on climate

Temperature, humidity and pH some are the various points for the efficiency. These factors were necessary for the efficiency of the microorganism. The other serious threat for human being was the mutation of microorganisms. Virus has mutated itself into various forms. In January 2021, a new variant of this virus appear in a person of Brazil (Shi *et al.,* 2020; Kalhori *et al.,* 2019).

Pros and cons related to COVID-19

Some positive aspects of COVID-19 are as follows-

- Less noise pollution
- Less air pollution
- Improvement in environment
- Clean rivers
- Improvement in healthcare services
- Improvement in greenhouse gases emission
- Use of traditional medicine

Due to lockdown air quality of entire country was improved. Level of suspended particulate matter also reduced in atmospheric condition (Sharma *et al.,* 2020; ICMR, 2020; Rajkumar, 2020). Some negative aspects of COVID-19 are as follows-

- Anxiety
- Depression
- Unemployment
- Economic loss
- Attacks on COVID warriors

A lot of severe attacks were noticed on COVID warriors. It was a matter of serious concern, so our government had to take some legal action. A bill had passed by the Indian government especially for the protection of COVID warriors attack on COVID warriors (Pedersen *et al.,* 2010; Ali and Alharbi*,* 2020).

Vaccine-The vaccination programme was started in India on January 2021.

- After approval some vaccine was issued by the government .These vaccines are as follows-
- COVAXIN®, developed by Bharat Biotech with the collaboration of Indian Council of Medical Research-National Institute of Virology.
- AstraZeneca's COVID vaccine marketed as Covishield. COVISHIELD, was developed by the University of Oxford and Vaccitech company.

Conclusion

COVID-19 is very challenging pandemic for whole world. Because of mutation property this virus considered as a smart virus. COVID-19 can be considered as Janapadodhwamsa. In this article, a brief insight on ayurvedic concept related to Janapadodhwamsa is described. Viral epidemics spreading now days can be considered as Pranavaha Strotasa dushti with predominant Vata and Kapha Doshas. It affects severely in those with pre-existing respiratory and circulatory co-morbidities. Preventive measures in terms of containing the spread can serve as the best way to combat the epidemic. Ayurveda help to find out the method of preventive and curative management for recent pandemic situation of COVID-19.

Conflict of interest

The authors declare that they have no conflict of interest.

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