An overview of Covid-19 with special reference to Janapadodhwamsa

Priyanka  
Department of Agad Tantra, Rishikul Campus Haridwar, UAU, Uttarakhand, India

Ramesh Chandra Tiwari  
Department of Agad Tantra, Rishikul Campus Haridwar, UAU, Uttarakhand, India

Rakesh Bhutiani  
Department of Zoology & Env. Sci. Gurukul Kangri (Deemed to be University) Haridwar, Uttarakhand, India

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, H1N1 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) Janapadodhwamsa 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°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
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 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 Acharya Charaka, 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.

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

According to Acharya charaka, the main reasons for the vitations of these factors is Adharma, Poorvajanam 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), Rakhsagana/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 humans and animals (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 Agantu 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 Vyadhişamatva (Immunity) (Patel et al., 2017).

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 Janapadodhwamsa |
|----|--------------------------------------|
| 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 (Rasayanam 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)
Devtaarachanam (Prayer to the Gods)
Sadvruttasya anuvrittischa (Adoption of preventive measures)
Prasahamo (Maintaining tranquility)
Guptraatmanam (Protection of self by chanting mantras etc)
Hitam Janapadaanaam
Shivaanam upasevanama
Sevanam Brahmacharyasya
Sevanam Brahmachaarinaam
Samkatha dhrama 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 lavaana 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 Vyayathaapanama 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 enhances 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).

- Dosaanulomini (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 immunemodulator 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).

**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.

References

Ali, I., & Alharbi, O. M. (2020). COVID-19: Disease, management, treatment, and social impact. *Science of the total Environment*, 728, 138861.

Bedford, J., Enria, D., Giesecke, J., Heymann, D. L., Ihekweazu, C., Kobinger, G., & Wieler, L. H. (2020). COVID-19: towards controlling of a pandemic. *The lancet*, 395(10229), 1015-1018.

Bhatia, R. (2020). Need for integrated surveillance at human-animal interface for rapid detection & response to emerging coronavirus infections using One Health approach. *The Indian Journal of Medical Research*, 151(2-3), 132.

Bherwani, H., Nair, M., Musugu, K., Gautam, S., Gupta, A., Kapley, A., & Kumar, R. (2020). Valuation of air pollution externality: comparative assessment of economic damage and emission reduction under COVID-19 lockdown. *Air Quality, Atmosphere & Health*, 13(6), 683-694.

Casanova, L. M., Jeon, S., Rutila, W. A., Weber, D. J., & Sobsey, M. D. (2010). Effects of air temperature and relative humidity on coronavirus survival on surfaces. *Applied and environmental microbiology*, 76(9), 2712-2717.

Chunekar, K.C. (2006). Bhavaprakasa Nighantu, edited by Dr. G.S.Pandey, Varanasi: Chaukamba Bharati Academy; Page 269 10.
Lai, C. C., Shih, T. P., Ko, W. C., Tang, H. J., & Hsueh, P. R. (2020). Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *International journal of antimicrobial agents, 55*(3), 105924.

Ma, Y., Zhao, Y., Liu, J., He, X., Wang, B., Fu, S., ... & Luo, B. (2020). Effects of temperature variation and humidity on the death of COVID-19 in Wuhan, China. *Science of the total environment, 724*, 138226.

Masihi, K. N. (2001). Fighting infection using immunomodulatory agents. *Expert opinion on biological therapy, 1*(4), 641-653.

Mishra Bhava (2002)., Bhavaprakasha Nighantu: Haritakyadi Varga-39. 10th ed. Chaukhambha Sanskrit Sansthan; Varanasi:. p. 10.

Misra SB. Bhavprakash. vol. 169. 9th ed. Misra B, Vaisya R, editors. Varanasi: Chaukhambha Sanskrit Sansthan

Pandey, Gyanendra (2002). Dravyaguna Vijnana, Part 1, 2nd Edition-, Krishnasadas Academy. 2002. P. 698-700

Park, J. E., Son, W. S., Ryu, Y., Choi, S. B., Kwon, O., & Ahn, I. (2020). Effects of temperature, humidity, and diurnal temperature range on influenza incidence in a temperate region. *Influenza and other respiratory viruses, 14*(1), 11-18.

Patel Devang, Baghel. A. S, Vasaiya Sunita, Kamal Kumar, Shital Bhagiya (2017). Relation of deha prakriti and vyadhikshamatva (immunity): a review study, *International Journal of Research in Ayurveda and Pharmacy 8*(5):90-94

Pedersen, A., Zachariae, R., & Bovbjerg, D. H. (2010). Influence of psychological stress on upper respiratory infection—a meta-analysis of prospective studies. *Psychosomatic medicine, 72*(8), 823-832. https://doi.org/10.1097/PSY.0b013e3181f4d003.

Pinto, N. (2020). Lockdown is a curfew, only emergency services open. *India Today. https://www.indiatoday.in/india/story/coronavirus-lockdown-curfew-bengaluru-police-commissioner-bhaskar-rao-karnataka-covid-19-1658912-2020-03-24.*

Poole, L. (2020). Seasonal influences on the spread of SARS-CoV-2 (COVID19), causality, and forecastability (3-15-2020) SSRN Electron.

Rajkumar, R. P. (2020). COVID-19 and mental health: A review of the existing literature. *Asian journal of psychiatry, 52*, 102066. https://doi.org/10.1016/j.ajp.2020.102066.

Ramberg, J. E., Nelson, E. D., & Sinnott, R. A. (2010). Immunomodulatory dietary polysaccharides: a systematic review of the literature. *Nutrition journal, 9*(1), 1-22.

Shankar, A. H., & Prasad, A. S. (1998). Zinc and immune function: the biological basis of altered resistance to infection. *The American journal of clinical nutrition, 68*(2), 447S-463S.

Sharma, P. V. (1998). Caraka samhita text with English translation,Vimanasthana, Chaukambha orientalia, Varanasi, Fourth edition , Page number-315-316

Sharma, P. V. (2009). Dravyaguna Vigyan, Chaukambha Bharti Academy Publication, Varanasi, vol.2, 341:758.

Sharma, R.K. Bhagavan, Dash (2018). Charaka Samhita Text with English translation, volume 2, Chaukambha Sanskrit Series Office Varanasi, Vimanasthana 3/7-8, page no.142-144

Sharma, S., Zhang, M., Gao, J., Zhang, H., & Kota, S. H. (2020). Effect of restricted emissions during COVID-19 on air quality in India. *Science of the total environment, 728*, 138878. https://doi.org/10.1016/j.scitotenv.2020.138878.

Shastri Satyanarayan (2012). Charak SamhitaVidyotni Hindi Vyakhya, Sutrasthana, Reprint, Varanasi, Choukambha Bharti Academy, Page number-587

Shi, P., Dong, Y., Yan, H., Li, X., Zhao, C., Liu, W., ... & Xi, S. (2020). The impact of temperature and absolute humidity on the coronavirus disease 2019 (COVID-19) outbreak-evidence from China. *MedRxiv.*

Sukumar, Bargale Sushant and Shashirekha R H.K. (2018). Textbook of Swasthavritha reprint-2018, page no-415, Choukhambha Sanskrit Samsthana, Varanasi.

Tripathi B. (2007). Purvardha Vimansthan Chapter 3 janpadoddhavansa vimani adhyy. In: Pandey G, editor. Charak Samhita. vol. 40. Chaukhamba Surbharti Prakashan. p. 675–87.

Yadav Trikamji Acharya (2014). Charaka Samhita of Agnivesha elaborated by Charaka and Dridhabala, Charaka Samhita with Ayurveda Dipika Commentary by Chakrapanidatta, edited by, reprinted 2014, New Delhi

Chaukambha Publications, Vimana sasthana, 3rd Adhyaya, 8th verse, page no. 241

Publisher's Note: ASEA remains neutral with regard to jurisdictional claims in published maps and figures.