



An Ayurvedic perspective of COVID 19: A Pandemic Situation

Megha Dipak Rudey^{*1}, Renu Rathi², Bharat Rathi²

¹Department of Kaumarbhritya, Mahatma Gandhi Ayurved College, Hospital and Research Centre, Datta Meghe Institute of Medical Sciences, Salod, Wardha, Maharashtra, India

²Department of Rasashastra and Bhaishjya Kalpana, Mahatma Gandhi Ayurved College, Hospital and Research Centre, Datta Meghe Institute of Medical Sciences, Salod, Wardha, Maharashtra, India

Article History:

Received on: 06 May 2020

Revised on: 15 Jun 2020

Accepted on: 20 July 2020

Keywords:

Agantuja Jwar,
Ayurveda,
Covid 19,
Janapadodwansa,
management,
Novel Corona

ABSTRACT

COVID-19 Novel coronavirus or corona disease is spreading continuously all over the world. Overloading of ICU and health care system capacity. Along with age factor, community spread, vertical transmission of disease and clinical manifestation is the risk factor for the poor outcomes. The transmission is mainly through respiratory droplets when individual sneezes or coughs and also due to the close contact with an infected individual. Every researcher is in found of preventive measure, and in found of effective treatment for it. As the population is rushing to keep themselves protected from the infection, *Ayurveda* practitioners are in stress that the *kalpas* cited in *Ayurveda* literature will be helpful in strengthening the immunity and to fight against COVID-19. It is an attempt to study the Novel Coronavirus (COVID-19) it's clinical diagnostic and management in *Ayurveda* perspective. Various *Samhitas*, such as *Charaka Samhita*, *Ashtanga Hridaya*, *Madhava Nidana* articles were referred for this study. According to *Ayurveda* literature, a unique method of impending a fresh identified illness Rather than centring on the bacteriological etiology, *Ayurveda* encirclements a universal skill for particularising the details of the illness at hand. Till the date, no vaccination is being found for COVID-19 yet, but the concepts given in *Vedas* have information about diagnostic and management. This attempt is to encourage *Ayurveda* practitioners and young researcher's to work on the formulations, which are cited thousands of years ago to breakdown the pathology of disease and work for the development and promotion of *Ayurveda*.



*Corresponding Author

Name: Megha Dipak Rudey

Phone: 7057291880

Email: megharudey121@gmail.com

ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v11iSPL1.4191>

Production and Hosted by

IJRPS | www.ijrps.com

© 2020 | All rights reserved.

INTRODUCTION

Adopting an unhealthy way of life, especially lack of physical workout along with increased psychological stress giving rise to extreme intensification in the frequency and dominance of non-communicable complaints. From the previous data recorded, non-communicable disorders killed approximately 41 Million individuals per year which are likely to be equivalent to 71% of mortality ratio happens globally which is the major reason for the health care system to concern about communicable disorders and non-communicable disorders. The changes occurring in surrounding and in a universal system, unauthorized practice of antibiotics or continuous usage

of immune suppressant treatments or raise in the frequency of drug-resistant microscopic organism, increasing populace, malnutrition, poverty is the reason of occurrence of novel disease-causing toxicities or re-appearance of disease-causing infections that indicates the hazard of attacking incipient infections. The contaminations which are recently appearing in inhabitants or be real beforehand but which are rapidly aggregate in commonness or a topographical array can be known as Emerging infections.

As per *Ayurveda*, the philosophy, epidemic comes under the word of *Janapada-udhwamsa*, which cause due to either of unbalanced *Vayu* (air), *Jala* (water), *Desha* (habitat) and *Kala* (seasons), assured ailments rise, kills the majority of populaces. According to *Ayurveda*, there are mainly three routes of Cause of all Diseases.

1. *Pragyaparadha*: Mistake of Intellect.
2. *Asatmedriyatha Samyoga*: Indecorous Dealings of senses with their objects.
3. *Parinaam or Kala*: The peripheral environs can initiate infection by distorting the body through atypical & life-threatening discrepancies in malaise, Rainfall or breeze which in turn leads to the causation of epidemics.

Also, under the title of *Adidaivika Bala Pravritta Vyadhi* (that causes which is unable to control by human brainpower), terms as *Sansargaja* and *Upsargaja* are cited which defines sicknesses which can be passed on directly from infested human being too healthy human being. As per the tip-offs obtainable in *Ayurveda* literature, the supervision of transmissible syndromes can be done one or the other precautionary or else therapeutically.

MATERIALS AND METHODS

Data was gathered from authentic *Ayurvedic* texts like *Ashtanga Hridaya*, *Bhaishajya Ratnavali Rasa tarangini Rasaratna samucchaya Sidha bhashaja manimala Rasendrasara sangraha*, *Charak Samhita*, *Sahastrayoga* and guidelines of WHO for COVID-19 along with various published articles.

Ayurveda and Novel Corona Virus

Recently the occurrence of an epidemic Novel coronavirus infection shocked the global health system. Coronaviruses (CoV) are infection fluctuating from the generalised cold to more severe sicknesses such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) is a new strain which previously mysterious in humans. Coronaviruses are zoonotic, which

means they easily spread among animals and people. Thus, it requires mass awareness, co-operation and association between different health care organizations and medical systems. Incidence of occurring infectious diseases more often also the transmitting rate more rapid than ever in several poles apart provinces of the world. Crucial scheduling, arrangement also its arrangements for epidemic prevention and its control are necessary for managing of newly-occurring ailments. On-going circumstances are demanding the extra added research to identify accurate modes of transmission and its medical countermeasures with influencing factors along with its effective management, especially its preventive aspect for viral disorders. In *Sanskrit*, the Virus is known as "*Vaayu + Rasa*". The infection which transmitting through the air including Novel coronavirus called as airborne viruses. As the infecting viruses like Novel corona majorly transmitting through the air, thus it require a healthy change in the surrounding atmosphere which can prevent such kind of infections.

SARS-CoV-2 was first reported in Wuhan (China). It was declared as an epidemic by WHO on 11th of March 2020 and confirmed its presence in all zones except Antarctica. For the evolution and treatment of the Novel coronavirus, or COVID 19 constant researches are being carried out globally, as till the date no reliable treatment is present. Many of the people across the world are in the state of panic owing to its fast-communicating nature, as per experts, no need to get panic as the infected individuals are under isolation. To avoid the possibilities of additional occurrences, should take precautions.

Although the disease was almost controlled ([Salzberger et al., 2020](#)), whether it has still Pervasive in Europe and US ([Grasseli, 2020](#); [Rate et al., 2020](#)). There are various meditational therapy, yet the evidence of the role played by Traditional Chinese Medicine (TCM) cannot be ignored ([Ren et al., 2020](#); [Cui et al., 2020](#)). It was with authority convoluted in Chinese Guideline on diagnosis and Treatment protocol of COVID-19, which was extraordinarily essential. Total numbers of positive cases cured by TCM, which was reported precisely 60,107 ([Ren et al., 2020](#)).

In rationality with the accomplishment of TCM in supervision a transmittable endemic, it was reasonable and needed to find how *Ayurveda* can help in COVID-19 pandemic challenge ([Rastogi, 2020](#); [Patwardhan et al., 2020](#)). Definitely, this moment is crucial for AYUSH systems to convert Indian health-care ([Patwardhan and Tillu, 2018](#)) and determine the impending of AYUSH for re-establishment of

health (Tillu, 2018). About 80% of COVID-19 positive cases are present with having mild signs necessitating merely primary therapeutic care. Rest of 20% cases, 15% require urgent medicinal attention in secondary health care services. Residual 5% of cases needs intensive care which transferred to tertiary health care units equipped with ICU (Zhou et al., 2020). Hypertension, DM, CHD and cerebrovascular disease are risk factor with a high risk of mortality (Wang et al., 2020). ARDS tracked by un-curable hypotensive shock, a multi-organ failure which may lead to death (Wu and McGoogan, 2020). Reduced peripheral capillary oxygen saturation (SpO₂) below 90% is a risk pointer in superficially mild cases (WHO, 2020).

OBSERVATION

Ayurveda is having a unique method of approach towards newly identified diseases. *Ayurveda* embraces a holistic method rather than focusing on the microbiological etiology for particularising the details of the disease at hand. For the elaboration of an unknown disease, *Ayurveda* having three points for an approach which are *Vikaara prakrti*, *adhishtanam* and *samuthaana visesham*.

In the middle of situation those developed with pneumonia, 98% were suffering from fever (*Jwara*), 72% were complaining of fatigue (*tandra*), 57% of symptom were of dry cough (*vataj kasa*), 41% of people were having anorexia (*aruchi*), 36% symptom was of myalgia (*anga marda*), 33% of people were suffering from difficulty in breathing (*shwasa*) and 24% were complaining of cough with sputum production (*kaphaja kasa*) (Huang et al., 2020).

In another report, the main clinical features seen were fever (*jwara*), cough (*kasa*), shortening of breath (*shwasa*). If the situation is worse, there will be labour breathing (*shramaj shwasa*), stubborn pain or pressure in the chest (*urah vedana*), mental misperception (*moha*), incompetence to arouse (*samaja Nasha*), cyanosis (*aasya shyavata*) (Alqah-tani, 2017). Diarrhoea (*atisara*) and nausea (*chardi*) were very slight while the primary presentation.

The controlling of *Aagantuja vikaara*, a treatment protocol of *nija vikaara* should follow (R Rathi and B Rathi, 2020). Therefore, appropriate identification of pathological model along with its associated features is important. Referring to the details existing from the places where the Covid-19 has maximally exaggerated, and especially from China, almost 41% of the cases were very mild with no features of viral pneumonia, other 39% of the cases had moderate features with mild pneumonia, 15% had severe features and 5% were critical, at appearance. Many

patients informed about fever, dry cough and slight respiratory distress. Later on the fever subsided, but respiratory distress turned out to severe and many of individual died.

After referring above factors, Novel coronavirus can be considered as *Kapha-vaata samsargaja jwara* (Rathi et al., 2020) with *pitta* association. As per the clinical features cited in classics, the initial stage was considering and comparing, but it acquires the stage of *sannipataj jwara* in a certain group of the patient population as the condition of infection exaggerates.

Consequently, the patients belonging to a geriatric age group and those with existing co-morbidities are more prone to be in the group that gets worse once the disease exaggerates. Therefore, in that group, the clinical course can be charted as follows- mild symptomatic illness at the appearance, leading to moderate illness terminating in fatal illness (WHO, 2020). The *jwara* may end up into the fatal forms of *sannipata jwara*, Because of the *syandana* and *Shoshana* property of prevailing *pitta*. That is the reason, the entire clinical course of covid-19 can be hypothesised as having these stages. (Aniket et al., 2017; Rastogi et al., 2019; Deshmukh et al., 2020),(Table 1).

CLINICAL STAGING OF THE DISEASE

Adhishtan - Site

The proper *adhishtan* of covid 19 can be doubted at *Koshta* itself, but the appearance takes place in *uraha*, which itself is a main site of *Kapha*. Many a time, it has been found that *pitta dosha* exerts a major pathological effect on *Kapha*. The *ushna guna* of *pitta*, in a group with the *sa-sneha* and *drava guna* which will exert a pathological effect on *Kapha*, thereby making it *asthira* (unstable) and *abadha* (unbounded). Here also, as specified in the description of the stages, *pitta* can generate this pathological falls leading to the *syandana* and further *Shoshana*. This can lead to *dhatu Paka* and death.

Samuthana vishesha - the etiology

The existence of a *Kapha-Vata* predominant *sannipata jwara* as a *janapada-udhwamsa* in *vasanta ritu* points to the speedy and violent vitiation of *Vayu*, *udaka*, *desha* and *Kala* due to the actions that can be set aside as *prajnaaparadha*.

STAGE WISE MANAGEMENT PROTOCOL FOR COVID - 19

STAGE 0 - Patient with positive travel history / contact history / home quarantine / isolation

Table 1: Stagewise Doshavastha along with its management

Stage	Dosha Avastha	Management guideline
1	<i>Kapha-Vata sannipata jwara.</i>	<i>Jwara shaman, kapha shaman, vata anuloman</i> and protection of <i>rogi-bala</i> .
2	Worsening of the already existing situation.	<i>Jwara shaman, Kapha shaman, Vata anuloman</i> , protection of <i>rogi-bala</i> , regulation of the <i>pitta</i> , especially its <i>Drava and ushna guna</i> .
3	Stage of the beginning of <i>dhatu paka</i> due to unchecked action of the <i>pitta dosha</i> .	<i>Jwar shaman</i> , medications to break the cycle of <i>dhatu pak</i> for Broncho dilation and cough production, defence of <i>rogi bala</i> .
4	<i>Dhatu pak</i> proceeds and <i>shwasa</i> comes forwards as a <i>upadrava</i> .	Same as above but in aggressive type. <i>tavidu kizhi, varavu kashayam, Sanni kizhi</i> etc. need to be applied
5	<i>Sannipataj jwara shighrakari</i>	Requires technological support along with <i>aatyayika chikitsa</i>

Table 2: Stage 0 symptoms with its Pathya-Apathya

Symptoms	Pathya-Apathya	Advice
No symptoms or very mild symptoms, to dispute pathogenesis (Hotchkiss and Opal, 2020). Consider it as the onset of <i>Kapha-Vata jwara</i> .	Favourable: - Easily digestible light food likes <i>kanji</i> ; <i>Chatani</i> of Gooseberry, Onion, Curry leaf, Ginger and Turmeric; Cooked vegetables; Soup of Green gram. Use warm water to drink. healthy lifestyles, tolerable physical activity, sufficient sleep, care of retainable and non-retainable urges, <i>sadvritta</i> (Khedekar et al., 2020), and avoidance and quarantine from infected persons are vital (Pandey, 2019). Unfavourable:- Heavy, Spicy, oily or fried foods; Junk foods, Curd, Cool drinks, Head bath; Exercise; Mental stress; Exposure to fan /Ac	Drinking water of <i>Shadanga Kashaya Churna</i> one tea-spoon boiled in two litres of water can be used as drinking water. <i>Tulsi coffee</i> of <i>tulsi, Shunti, Maricha</i> and jaggery or sugar. Small onion/ <i>vasa / Amruta / Kachuri</i> can also be added according to the condition - Can be taken three to four times a day. Steam inhalation - With <i>Tulsi / Panikurka</i> with <i>Haridra</i> Gargling-water boiled with <i>Haridra/Thriphala/Yashtimadhu/Lavana</i> . <i>Dhupana</i> - <i>Sheemakonna/ Nimb/Coconut shell+ hingu/sarshapa+ tunic of garlic/onion+ salt</i> , or all (Rathi R et al., 2020). <i>Rub Rasnadi churnam</i> over scalp, may also be a useful strategy for disinfection (Bhatwalkar et al., 2019)

Table 3: Symptoms and Treatment in Stage 1 Infection

Pathologic hallmark, <i>Kapha-Vata Sannipata Jwara</i>	
Therapeutic targets- <i>Jwara Shaman, Kapha Shaman, Vata Anulomana</i> and protection of <i>Rogi-bala</i>	
<i>Kashaya:</i>	<i>Pathyakusthumbaradi Kashaya - (Ah.Ci. 1/62-63)- Kapha Vata Shaman</i> <i>Vyaghryadi Kashaya - (Ah.Ci. 1/61)-Vata Kapha Shaman</i> <i>Amrutotaram - (Sy. jwaraprakarana)- Amapachan</i>
<i>Panajala : (Medicated water) and gruel</i>	<i>Dashamulakatutraya - (Sy. Swasakasa prakarana)-Kaphanubandha</i> <i>Shadanga - (Ah.Ci 1/15)- Pittanubandha Panchakola sidha yavagu</i>
<i>Gutika:</i>	<i>Vettumaran - Kapha Vata Shamana</i> <i>Mukkamukkadukadi - Kapha Shamana</i> <i>Vilwadi - (Ah.Ut.36/84-85) - Jwarahara, Visha hara</i> <i>Lakshmi Vilasa Rasa - (Br. Rasayanadhikara 55-58) -Kapha Vata Shamana</i> <i>Lokanatha Rasa – Pachana</i> <i>Anandabhairava rasa</i>
<i>Churna:</i>	<i>Talisadi churnam - (Ah.Ci.4/58-60-) Kapha Vata shamana</i> <i>Sitopaladi churna - (Br.14/27-28)-Pitta Vata shamana</i> <i>Vyoshadi Vataka - (AH. Ut. 20/4-5)-Kapha Vata shamana</i> <i>Lavankatvakadi churna</i>
<i>Arishtam:</i>	<i>Amritarishta - (Sy. Arishtaprakarana) -If Jwara is dominant</i> <i>Vasarishta – (Sy. Arishtaprakarana)-If Kasa is dominant</i> <i>Kanakasava - (Sy. Arishtaprakarana) - If Shwasa is dominant</i> <i>Panchakolasava- for pachana</i>

Table 4: Symptomatic Treatment in 2nd Stage

Pathological hallmark, worsening of the already existing clinical situation	
Therapeutic targets - regulation of the status of <i>pitta</i> , especially its <i>Drava</i> and <i>ushna guna</i>	
<i>Kashayam:</i>	<i>Elakanadi Kashaya (Sy. Rajayakshma prakarana) + Lakshadi churnam (Br.27/13) – Kapha Vata hara with Pittanubandha</i> <i>Balajirakadi Kashaya (Sy. Swasakasa prakarana – Vata Kapha with Pittanubandha</i> <i>Abhayapippalimuladi Kashaya (Ah.Ci. 1/55 – Anulomana, Vata Kapha hara</i>
<i>Panajala:</i>	<i>Nayopaya (Sy) – Vata Anulomana, Shwasahidhma hara</i>
<i>Gutika:</i>	<i>Tribhuvana Kirti Rasa (Br.) – Vata Kapha hara</i>

Table 5: Symptomatic Treatment in 3rd Stage

Symptomatic Treatment	
<i>Kashayam:</i>	<i>Dusparsavasadi Kashaya (Sy- Rajayakshma)</i> <i>Bharngyadi kashaya – (Sy- Jwara)</i>
<i>Rasa preparation:</i>	<i>Hingula Bhasma (Rasaratna samucchaya), Abhraka Bhasma (Rasatarangini 10/39-42), Rasa Sindura (Rasatarangini 6/162-176) (to manage the progressing respiratory infection)</i> <i>Arogya Vardhini Vati (Rasendrasara sangraha.13/105), Suvarna malini vasantara rasa, Purna chandrodaya rasa (to arrest the dhatu paaka)</i>
<i>Arishtam:</i>	<i>Vasarishta (Sy- arishta yoga), Kanakasava (Sy- arishta yoga), Kasturi Kalpa Rasayana (Patented formulation)</i>

Table 6: Treatment Protocol in 4th Stage

Pathological hallmark, Dhatu Paka proceeds and shwasa coming forward as a upadrava, and creates fatality	
<i>Kashayam:</i>	<i>Darunagaradi Kashaya (Sy- Jwara)</i>
<i>Rasoushadhi:</i>	<i>Siddhamakara Dhwaya (Rasa tarangini)</i> <i>Rasa Manikya (Sidha bhesaja manimala/Jwara)</i> with <i>Ashwagandha churna</i> in 1:15 ratio
<i>Arishtam:</i>	<i>Saptachhada Rasa (Ah. Ci. 4/33)</i> with <i>Kasturi Kalpa Rasayana</i>

Table 7: Treatment Protocol in 5th Stage

S. No.	Pathological hallmark
1.	<i>Navapashana kettu (Sidha)</i> - a variant of <i>pottali kalpana</i> in <i>rasa sashtra</i>
2.	<i>Agastya rasayana (Ah.Ci. 3/127-132)</i>
3.	<i>Chyavanaprahsa (Ah.Ut. 39/33-41)</i>
4.	<i>Kushmanda Rasayana (Ah.Ci. 3/114-117)</i>
5.	<i>Indukantam Ghrita (Sy-Ghruta yogas)</i>
6.	<i>Bharangi guda</i>

Pathological hallmark - weakened stage due to medications and disease. Many a time, the patient will be disturbed by sequel like post viral respiratory mucosal hypersensitivity

STAGE 1: Symptoms and Treatment**STAGE 2 & 3: Symptomatic Treatment****STAGE 4: Treatment Protocol****STAGE 5: (Stage of Convalescence) Treatment Protocol****DISCUSSION**

Clinical course study can lead to the following conclusions that The group of patients, who are getting worse progressively and having a deteriorated state of *Rogi Bala* already because of old age or due to comorbidities. The co-existing *pitta*, even if very mild, will be causing *syandana* and *Shoshana* in the chest gradually, which cannot be struggled by the body due to previously compromised *rogi bala*. Up till the date, there is no vaccination being found for COVID-19 infection yet, but this is what *Vedas* has suggested to fight with such health conditions which can give a try. Along with using General guiding principle for this protocol- (Table 2, Table 3, Table 4, Table 5, Table 6 and Table 7).

1. As in any epidemics, firstly take the travel history and contact history of the patient.
2. Examine the patient well.
3. Order the needed laboratory or imaging panels as and when essential.
4. Assess the *koshtha*, *agni* prominence of the patient.

5. Definitely have an assessment of the *vyaadhi-avastha* in a careful manner, as some medicines may be contra-indicated in some specific *avasthas*.
6. Assess the *rogi bala* using the ten-point clinical examination protocol (*dasha vidha pariksha vidhi*) and calculate the practical status of the patient.
7. Assess the status of *Oja* and guess the chance for an immediate casualty.
8. It is mandatory to read the Ayurvedic diagnostic and pathologic approach to Covid 19 prior to the management protocol and understand the pathologic processes happening at different stages of disease progression.
9. The selection and combinations of medicines should be made by considering the *bala* of *rogi*, *agni* and *koshtha*, and the *rogavastha*.
10. The dosage of each pharmaceutical preparation shall be fixed as per the classical strategies.
11. The medicines described in each stage shall be utilized thoughtfully in the succeeding stages also.
12. Diet and regimens, as in stage 0, maybe continuous during the treatment period.
13. General safety measures for doctors, paramedics and health workers need to be confirmed in the facility.

14. The technical support of western medicine has to be ensured when and where it is necessary (Deshmukh *et al.*, 2020).

CONCLUSION

The world is facing to Epidemic diseases since from Ancient time. Literature related to Epidemic diseases their Causation, Prevention and Management is timely mentioned in Ancient Indian literature like *Atharveda*, *Upanishada*, *Vedas* etc. As per *Ayurveda* principles, all diseases are caused due to an imbalance in the *tridosha* (*Vata*, *pitta* and *Kapha*) due to various factors. So therapeutic management (Oral medication and *Panchakarma*) are done to break pathology which creates an imbalance of this *tridosha*. Also, *Rasayan* therapy helps in building *Saptadhatu* (basic elements of the body) and keeping Longevity. So we can conclude that epidemic diseases are formerly explained in details in ancient *Ayurveda* literature with their prevention and management. We can use this knowledge as a basic principle with up-gradation as per current scenario for better well-being.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

Funding Support

The authors declare that they have no funding support for this study.

REFERENCES

- Alqahtani, A. S. 2017. Knowledge and attitude toward Middle East respiratory syndrome coronavirus among health colleges' students in Najran, Saudi Arabia. *Int J Community Med Public Health*, 4(8):2641-2647.
- Aniket, P., Pallavi, D., Aziz, A., Avinash, K., Vikas, S. 2017. Clinical effect of Suvarna Bindu Prashan. *Journal of Ayurveda and Integrated Medical Sciences (JAIMS)*, 2(3):11-18.
- Bhatwalkar, S. B., Shukla, P., Srivastava, R. K., Mondal, R., Anupam, R. 2019. Validation of environmental disinfection efficiency of traditional Ayurvedic fumigation practices. *Journal of Ayurveda and Integrative Medicine*, 10(3):203-206.
- Cui, H. T., Li, Y. T., Guo, L. Y., Liu, X. G., Wang, L. S., Jia, J. W., Liao, J. B., Miao, J., Zhang, Z. Y., Wang, L., Wang, H. W. 2020. Traditional Chinese medicine for the treatment of coronavirus disease 2019: a review. *Traditional Medicine Research*, 5(2):65-73.
- Deshmukh, A. S., Rathi, R., Rathi, B. 2020. Concept of Rasayana: Unique Ayurvedic Approach in Preventing Infectious Diseases with Special Emphasis on COVID-19. *International Journal of Research in Pharmaceutical Sciences*, 11(SPL1):938-941.
- Grasseli, G. 2020. Critical care utilization for the COVID-19 outbreak in Lombardy. Italy: early experience and forecast during an emergency response. *Jama*, 323(16):1545-1546.
- Hotchkiss, R. S., Opal, S. M. 2020. Activating Immunity to Fight a Foe — A New Path. *New England Journal of Medicine*, 382(13):1270-1272.
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng, Z. 2020. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The lancet*, 395(10223):497-506.
- Khedekar, S., Rathi, R. B., Rathi, B. J., Deshmukh, A. 2020. The rationale behind Ayurveda Codes of Conduct (Aachar Rasayana) in COVID-19 like new disorders. *International Journal of Research in Pharmaceutical Sciences*, 11(SPL1):391-395.
- Pandey, D. N. 2019. Seven shields of Ayurveda between health and diseases. *Ann Ayurvedic Med*, 8(1):6-10.
- Patwardhan, B., Chavan-Gautam, P., Gautam, M., Tillu, G., Chopra, A., Gairola, S., Jadhav, S. 2020. Ayurveda Rasayana in the prophylaxis of Covid-19. *Curr Sci*, 118(8):1158-1160.
- Patwardhan, B., Tillu, G. 2018. Universal Health Coverage and AYUSH systems. *Journal of Ayurveda and Integrative Medicine*, 9(1):1-2.
- R Rathi and B Rathi 2020. COVID 19 Pandemic and Preventive Footsteps. *Int J Ayu Pharm Chem*, 12(3):100-106.
- Rastogi, S. 2020. Viral epidemics and traditional health care systems: It's time to act honestly, proactively and collectively. *Annals of Ayurvedic Medicine*, 9(1):1-5.
- Rastogi, S., Lakhotia, S. C., Singh, R. H. 2019. Ayurvedic Rasayana Therapy: A Rational Understanding Necessary for Mass Benefits. *Translational Ayurveda*, pages 77-99. ISBN 978-981-13-2062-0.
- Rate, C. F., Onder, G., Rezza, G., Brusaferro, S. 2020. Characteristics of Patients Dying in Relation to COVID-19 in Italy. *Jama*. Published on: 23 March 2020.
- Rathi, B., Rathi, R., Khobragade, P. 2020. Relevance of Ayurveda Anti-viral herbal wisdom from the perspective of current researches. *International Journal of Research in Pharmaceutical Sciences*

- ences, 11(SPL1):175–182.
- Rathi R et al. 2020. Review on Role of Dhoopan in the prevention of airborne infections (COVID-19). *International Journal of Research in Pharmaceutical Sciences*, 11(SPL1):246–252.
- Ren, J. L., Zhang, A. H., Wang, X. J. 2020. Traditional Chinese medicine for COVID-19 treatment. *Pharmacological Research*, 155:104743–104743.
- Salzberger, B., Glück, T., Ehrenstein, B. 2020. Successful containment of COVID-19: the WHO-Report on the COVID-19 outbreak in China. *Infection*, 48(2):151–153.
- Tillu, G. 2018. AYUSH research for New India: Vision and strategies. *Journal of Ayurveda and Integrative Medicine*, 9(3):240–244.
- Wang, D., Hu, B., Hu, C., Zhu, F., Liu, X., Zhang, J., Wang, B., Xiang, H., Cheng, Z., Xiong, Y., Zhao, Y. 2020. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *Jama*, 323(11):1061–1069.
- WHO 2020. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected: interim guidance. World Health Organization. Accessed on 13 March 2020.
- Wu, Z., McGoogan, J. M. 2020. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *Jama*, 323(13):1239–1242.
- Zhou, F., Yu, T., Du, R., Fan, G., Liu, Y., Liu, Z., Xiang, J., Wang, Y., Song, B., Gu, X., Guan, L. 2020. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *The lancet*, 395(10229):1054–1062.