

COVID-19 A REVIEW BASED ON CURRENT EVIDENCESurabhi Srivastava¹, Vinay K. Srivastava*² and Chhavi Srivastava³¹DEI, Faculty of Integraed Medicine, Homoeopathy Medical College Agra 282005, India.²Biochemical Research Laboratory, Department of Chemistry, D.S College, Aligarh 202001, Dr B.R Ambedkar University Agra, India.³Pt Jawaharal Nehru State Homeopathic Medical College, Kanpur 208024 UP India.***Corresponding Author: Vinay K. Srivastava**

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ABSTRACT

There is a new Public health crises threatening the world with emergence and spread of 2019 novel coronavirus (2019-n CoV) or the severe acute respiratory syndrome coronavirus 2 (SARS- CoV-2) COVID-19 causes respiratory infection including Pneumonia, cold, sneezing, fever, sore throat, breathlessness, fatigue, malaise and coughing in humans while in animals it causes diarrhea and upper respiratory diseases. The disease is transmitted by inhalation or contact with infected droplets. Coronavirus enters in human cell through membrane ACE-2 exopeptidase receptor. WHO (World Health Organisation) and ECDC (European Centre for Disease Prevention and Control) advised to avoid public place and close contact to infected persons and pet animals. Corona Virus (2019-n CoV) was first identified and isolated from Wuhan city of Hubei Province of China. As of June 20, 2020. The WHO reported that there are 8525042 confirmed cases globally and 456973 deaths have been registered. The WHO officially described the COVID-19 outbreak as a pandemic due to the speedy spread of the novel Corona virus across the world.

KEYWORDS: COVID-19, Severe Acute respiratory disease, Epidemiology, Pandemic.**1. INTRODUCTION**

In late December 2019 several patients in Wuhan City of Hubei Province of China started reporting symptoms that resembled Pneumonia called the 2019 novel corona virus (2019-n CoV). The WHO eventually changed the name of virus to the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). The disease it causes called corona virus disease 2019 (COVID-19). It is rapidly spreading from its origin in Wuhan City, China to the rest of the world.^[1,2]

It is now present in 216 countries as of June 20, 2020 there have been 8525042 confirmed cases globally and 456973 deaths have been registered. The WHO Called COVID- 19 a Pandemic on March 11,2020. The disease is mild in most people, in some (usually the elderly and those with comorbidities) it may progress in acute respiratory distress syndrome (ARDS) and multiorgans dysfunction. Many people are a symptomatic. Prevention entails home isolation, social distancing of suspected cases and those with mild illness and strict infection control measures at hospitals that include contact and droplet precautions. The virus spreads faster than its two ancestors the SARS-CoV and Middle East respiratory syndrome coronavirus (MERS-CoV) but has lower fatality. The global impact of this new epidemic is yet uncertain. According to the centre for disease control and

prevention.^[3,4] The transmission of SARS-CoV-2 occurs mostly person to persons via respiratory droplets within a range of 180cm. The virus can also be transmitted if a person touches a mucosal surface after touching an object with the virus on it. India has reported confirmed cases 395048 and 12948 deaths till June 20, 2020.

This review article gives a bird's eye view about this new virus and condenses the surge of information into an organised format.

2. History and Microbiology

The corona viridae family encompasses viruses with a single-stranded positive sense enveloped RNA genome of size approximately 26-32 Kb(Kilobases) in length.^[5] Coronavirus is spherical or pleomorphic covered with club shaped glycoprotein. It is 60 nm to 140 nm in diameter with spike like projection on its surface. It appears crown like under electron microscope.^[6] The Phylogenetic analysis of the sequence showed that it belonged to the sarbecovirus sub genus of genus Beta coronavirus. The receptor-binding domains (RBD) of the spike protein^[7,8] mediates interaction with the total host cell receptor. Specific mutation in the RBD of the SARS-CoV-2 spike glycoprotein were found to have enhanced binding to the ACE2.^[9,10]

There are four main sub groupings of coronavirus was first identified in the Mid 1960s. The seven CoV that can infect people are:

1. 229 E alpha Corona Virus
2. NL 63 alpha Corona Virus
3. OC43 beta Corona Virus
4. HKUI beta Corona Virus
5. MERS-CoV beta Corona Virus causing Middle East respiratory syndrome (MERS)
6. SARS-CoV beta Corona Virus causing respiratory syndrome (SARS)
7. 2019 Novel COV (n CoV) or COVID-19 Each of sub type corona virus has many serotypes. Some of them were affect humans of other affected animals such as Pigs, Birds, Cats, Mice and Dogs.^[11,12,13] SARS-CoV-2 consists of four main structural proteins, Spike (S) envelope (E), membrane (M), and Nucleocapsid (N).^[14,15,16] The S. Protein allows the virus to bind to the host's cell membrane.^[17,18] The angiotensin- converting enzyme 2 (ACE2) receptors on host cells have been found to be the target of S protein it then undergoes structural changes to fuse with host and this eventually allows viral genes to enters the host cell.^[19,20] Genomic comparison has shown that the SARS-CoV-2 has an 80% resemblance to *Rhinolophus Sinicus* bat and 96% resemblance with the *Rhinolophus affinis* bat^[21,22] one research team found that one sample of the virus had 99% genomic similarity with Pangolins and suggested that animal may be an intermediate host to the virus.

3. Epidemiology

The COVID-19 Pandemic has resulted in a global health crisis affecting almost every country and Territory in the world. As the virus spreads across the globe different countries and in different stages of the COVID-19 infection. There are mainly four stages of a Pandemic.

Stage I In the first stage of a Pandemic the disease does not spread locally cases reported are usually people who have had Travel history to an already affected country.

Stage II This is the stage of local transmission when people who have brought the virus into the country with usually friends and family. At this stage it is easy to trace spread and quarantine people.

Stage III This stage is called Community Transmission when the source of the infection is untraceable, this stage is identified by people who have not had travel history getting affected by the virus. Once here spread is extremely contagious and difficult to control. At this stage large geographical lockdowns become important as random members of the Community start developing the disease.

Stage IV In this fourth and final stage of Transmission, there is a widespread outbreak an epidemic – as the

number of cases and deaths begin rapidly multiplying with no end in sight. In this stage the disease becomes endemic i.e. native to population. A Pandemic is an epidemic that is spread over multiple countries or continents.

COVID-19 is high strung to all ages infection is transmitted through large droplets generating during coughing, sneezing by symptomatic patients but can also occur from a symptomatic people and before on set of symptoms.^[23] Infection is acquired by inhalation of droplets or touching surfaces contaminated by them and then touching the nose, mouth and eyes. The incubation period varies from 2 to 14 days (median 5 days)^[24,25] studies have identified angiotensin receptor 2 (ACE2) as the receptor through with the use of real time reverse transcription Polymerase chain reaction (RT-PCR).

Researchers identified that the cause being a novel, coronavirus labelled as SARS-CoV-2 later also named corona virus disease 2019 (COVID-19). The virus is also present in the stool and contamination of the water supply and subsequent transmission via aerosolization feco oral route is also hypothesized.

The Ministry of Health and Family Welfare.^[26] government of India and Indian Council of Medical Research (ICMR) reported the first case of the COVID-19 Pandemic In India on January 30,2020 and it was in Kerala, a southwestern coastal state. The affected had a travel history from Wuhan, China. As of June 20, 2020 The WHO^[27] has reported that there are 8525042 confirmed cases of COVID-19 456973 deaths globally. Whereas in India confirmed cases 395048 and 12948 deaths.

Countries with reported laboratory confirmed COVID-19 highest cases and deaths by WHO region till June 20,2020 has been reported on Table 1. Situation report-152 received by WHO from National authorities by 10.00 CEST (Central European Summer Time) June 20, 2020 for Corona Virus disease is shown on Table 2.

Highest confirmed, Cured and deaths cases top ten state wise in India linked with novel corona virus (2019-n CoV) till June 21, 2020 reported by Ministry of Health and Family welfare government of India is shown on table 3.

Table 1: Countries with reported Laboratory confirmed COVID-19 highest cases and deaths by WHO regions till June 20, 2020.

Reporting country	Total confirmed cases	Total Confirmed new Cases	Total deaths	Total New Deaths	Transmission classification
United States America	2172212	23046	118205	733	Community Transmission
Spain	245575	307	28315	1179	Community Transmission
Russian Federation	576952	7889	8002	161	Cluster of Cases
United Kingdom	301819	1346	42461	173	Community Transmission
Italy	238011	0	34561	47	Community Transmission
Germany	189135	601	8883	11	Cluster of Cases
Brazil	978142	22765	47748	1238	Community Transmission
Turkey	185245	1214	4905	23	Community Transmission
France	154141	584	29551	14	Community Transmission
Iran (Islamic Republic of)	200262	2615	9392	120	Community Transmission
China	84970	30	4645	0	Community Transmission
Canada	100220	367	8300	46	Community Transmission
India	395048	14516	12948	375	Cluster of Cases

Table 2: Situation in numbers (situation report by WHO Region 152 Total (New cases in last 24 hrs) till June 20, 2020.

Globally	8525042 cases (138980)	456973 deaths (6271)
Africa	208535 cases (7357)	4750 deaths (155)
Americas	4163813 cases (71287)	215903 deaths (3 386)
Eastern Mediterranean	878428 cases (21778)	19560 deaths (519)
Europe	2509750 cases (18313)	192645 deaths (1726)
South-East Asia	560285 cases (19244)	16814 deaths (454)
Western Pacific	203490 cases (1 001)	7288 deaths (31)

Table 3: Highest confirmed, cured and deaths Cases Top Ten State wise in India linked with COVID-19 till June 21,2020 (Reported by Ministry of Health and Family Welfare Government of India).

Name of State/Union Territories	Total Confirmed Cases	Cured / discharged/migrated cases	Total Deaths
Maharashtra	28205	64153	5984
Gujrat	26680	18694	1638
Tamilnadu	56845	31316	704
Delhi	56746	31294	2112
Rajasthan	14536	11274	337
Madya Pradesh	11724	8880	501
West Bengal	13531	7865	540
Andhra Pradesh	8452	4111	101
Punjab	3952	2678	98
Uttar Pradesh	4258	2441	104

4. Treatment

The treatment of patients with COVID-19 is mainly symptomatic. Holshve *et al* reported that Ramdesivir^[28] a promising antiviral drug achieved good results against a wide array of RNA viruses. India, the largest producer of hydroxychloroquine (HCQ) used as antimalarial drug has approved by Indian Council of Medical Research

government of India to supply 55 countries as part of the efforts to fight the global COVID-19. Chloroquine and HCQ appear to block viral entry into cell by inhibiting glycosylation of host receptor, proteolytic processing and endosomal acidification. HCQ has been found to have immunomodulatory activity^[29] and could effectively inhibit SARS-CoV-2 in vitro. In historical control study

in patients with SARS, MERS patient treated with antiviral drugs lopinavir-ritonavir with ribavirin had better outcomes as compared to those given ribavirin alone^[30,31] other drugs proposed for therapy are arbidol^[32,33] (an antiviral drug available in Russia and China), intravenous immunoglobulin plasma of patients recovered from COVID-19 Convalescent Plasma Therapy^[34,35] is an experimental for treating COVID-19 Patients. In this treatment, plasma a blood component from cured patient is transfused to a critically ill corona virus patient. The blood of a person who has recovered from COVID-19 develops antibodies to fight the virus. Convalescent Plasma Therapy that is being currently studied by the Indian Council of Medical Research, through open label randomised controlled trial to evaluate it for both safety and efficacy. The Transfusion of convalescent plasma is also not without risks, which range from mild reactions like fever, itching to life threatening allergic reaction and Lung injury. Plasma Therapy is no silver bullet to recommend it without undertaking, studying it thoroughly with robust scientific methods may cause more harm than good. There are multiple research teams trying to investigate a possible vaccine for the virus.^[36,37] The role of the spike protein in the viral infecting and pathogenesis is a possible preventive target. Multiple antiviral regimens are being tried for the treatment.^[38,39]

In the wake of the COVID-19 outbreak entire mankind across the globe is suffering Enhancing the body's natural defence system (Immunity) play an important role in maintaining optimum health. We all know that prevention is better than cure. While there is no medicine for COVID-19 as of now it will be good to take preventive measures which boost our immunity in these times. Ministry of AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy) government of India Central Council of Indian Medicine preventive health measures and boosting immunity with special reference to respiratory health. These are supported by Ayurvedic literature and scientific publications^[40,41,42] Ayurveda being the science of life propagates the gifts of nature in maintaining healthy and happy living, there are multiple research teams trying to investigate a possible Recommended measures.

4.1 General measure

- Drink warm water throughout the day.
- Daily practice of yogasana, Pranayama and meditation for at least 30 minutes (yoga at home, stay home, stay safe).
- Spices like Turmeric, Cumin, Coriander and Garlic are recommended in cooking.

4.2 Ayurvedic Immunity Promoting measures

- Drink Herbal Tea/decoction made from Basil, Cinnamon, Black Pepper, Dry Ginger, Raisin once or twice a day.
- Golden milk-Half tea spoon turmeric powder in 150ml hot milk once or twice a day.

- Take Chyavanprash 10g (one tea spoon) in the morning. Diabetics should take sugar free chyavanprash.

4.3 During Dry Cough/Sore throat measures

- Steam inhalation with fresh mint leaves or caraway seeds can be practiced once a day.
- Clove powder mixed with natural sugar/honey can be taken 2-3 times a day in case of cough or throat irritation.
- The ayurvedic concept appeared and developed between 2500 and 500 BC in India.^[43,44]

5. Prevention

Since at this time there are no approved treatments for their infection, prevention is crucial. Centre for disease Control and Prevention and Ministry of health and family Government of India recommends multiple steps to prevent the transmission and risk of COVID-19.^[45,46]

- Soap and water: Wash hands for a minimum of 20 seconds. As soaps molecules dissolve the fatty outside layer of virus.
- Alcohol Hand Sanitizers: Alcohol (Ethanol/isopropyl alcohol) molecules dissolve the fatty outside layer of virus and damage the structures of virus proteins. Minimum 60% alcohol for hands and 70% for surfaces.
- Bleach Solution: NaClO (Sodium hypochlorite) Bleach oxidizes and destroys virus protein and genetic material it should be left on surfaces for at least 10 minutes. Minimum concentration of 0.1% Hypochlorite.
- Public has also been told to avoid touching mucosal surfaces such as Mouth and Nose with hands that have not been washed.
- Isolation of confirmed or suspected cases with mild illness at home is recommended.
- Airborne Transmission precautions should be taken during aerosol generating procedures such as incubation, suction and Tracheostomies.
- At the community level people should be asked to avoid crowded areas and postpone non essential travel to places with on going transmission.
- Patient should be asked to wear a facemask. N-95 is a type of mask that is made to block large particles and small particles in the air that contain virus. The name comes from its ability to filter 95% of particles in the air.
- The ventilation at home should be good with sunlight to allow the destruction of virus.
- All clinicians should keep themselves updated about recent developments including global spread of the disease.
- People should stop spreading myths and false information about the disease and try to allay panic and anxiety of the public.

CONCLUSION

COVID-19 was Spreading human to human transmission by close contact through airborne droplets generating by coughing, sneezing, kissing and smooching across the world at an alarming rate. The SARS-CoV-2 outbreak has challenged the economic, medical, and public health infrastructure of different countries. There are no anticorona virus vaccine to prevent or treatment but with proper preventive measures the virus can be contained and the population protected.

According to WHO and ECDC guidelines avoid the contact with sick person, maintain social distancing stay at home avoid the market or public place special attention and efforts to protect or reduce transmission should be applied in susceptible populations including children, healthcare providers and elderly people.

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