

# COVID -19, the Global Pandemic: reviewed under India's Prospective

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## Abstract

Novel SARS CoV - 2 Viruses has the same track record of other virulent diseases like HIV/AIDS, SARS, Ebola and MERS of 21<sup>st</sup> century and their prevalence period, peak awareness and course of combat. COVID-19 is an emerging, novice virus evolved pandemic (1<sup>st</sup> Feb 2020) and posed greater threat for mass extinction transmitting to 215 countries on earth. Present study envisages the virus, history, impact, diagnosis, and stay away from the apocalyptic virus. The study also includes its present statistics, status, the pros and cons considering the global and Indian scenario. The geriatric age groups are hard hit but younger people are not invincible. Since the pandemic is aggravating and the world is heading towards mass extinction. Necessary scientific researches to discover a vaccine and standard drugs of choice have become global urgency. Presently solidarity and isolation stress are being implemented to defend the pandemic. The application of Ayurveda medicine, its practices and practices followed by different countries are different. To stay away from the pandemic virus and maintaining the economic stability is discussed in context of the globe and India.

**Keywords:** COVID-19, Pandemic, Climate change, Virus impact, ACE-2, Migrant labourers

## Introduction:

Corona Virus Disease 2019, titled as COVID-19, is the acute respiratory syndrome by a novel virus identified as Severe Acute Respiratory Syndrome (SARS)-CoV-2 which is new-fangled family of enormous strain of viruses and virulent to the animals and specifically to

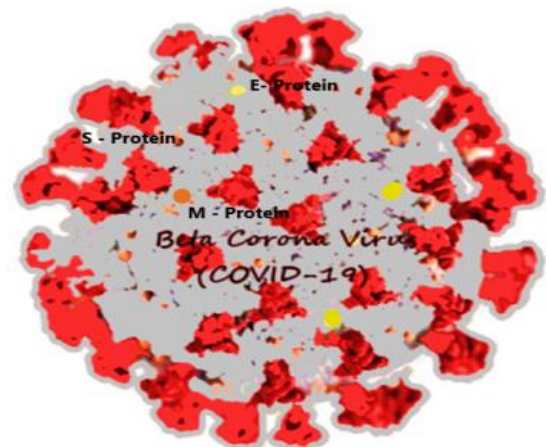


Fig 1: COVID-19 virus under microscope;  
Source: <http://dx.doi.org/10.1016/B978-0-12->

Human species who are marching towards sixth mass extinction. CoVs are +stranded RNA viruses having crown-like appearances over the molecule when seen under an electron microscope. The different manifestations of such viruses are MERS (Middle East Respiratory Syndrome) infected from camels, SARS (Severe Acute Respiratory Syndrome), and the apocalyptic is the COVID-19. They cause respiratory infections from the common cold to acute respiratory infections causing fatal. SARS epidemic started from Guangdong in China from 2002 infecting 8000 victims with 800 mortalities (from 37 countries) and was in peak during first week of Feb 2003. . The Four types coronavirus are 229E, NL63, OC43, and HKU1 and are accountable for mild common cold, but the severe and acute are SARS-CoV-2 and (MERS-CoV), are responsible for acute pneumonia followed by cardiac and kidney impair and fatal.

### **Origin:**

A 57 years Chinese lady (Wei Guixian), a sea food seller at Huanan in Wuhan was the Patient zero with symptoms of cold, cough and sneeze of the COVID-19 (beta coronavirus) pandemic, on 10<sup>th</sup> Dec 2019 and was quarantined (The Economic Times, Mar 30<sup>th</sup>, 2020). COVID-19 was initially spotted during the end of Dec, 2019 in Wuhan, following cases of pneumonia. The virus has blown out over 215 countries and territories as on date across the globe. It is affirmed pandemic by the World Health Organization on 11<sup>th</sup> Mar. 2020. Wuhan city was under lockdown from 23<sup>rd</sup> Jan 2020 quarantine was declared. NBC report (Revathi Krishnan on 16<sup>th</sup> Jan, 2020), corona viruses are of large family identified initially in humans during mid-1960. Some of them are infestation as conjunct cold, cough and sneeze. The carriers are found as zoonotic animals such as bats, camels, pangolin and many other animals yet to be finalized. The corona virus can cause more severe sicknesses like SARS and MERS spread in the beginning of 21<sup>st</sup> century. Late Li Wenliang, a 34 years Chinese eye specialist first doubted about a spread in Wuhan (after self-infection) with SARS, later became acute and died on 6<sup>th</sup> Feb 2020.

### **Review of Literature:**

Nagata N et al., 2007<sup>[1]</sup> mentioned that all the viruses invade a human body if the resistance of the host is weak as in children and geriatrics. The structures under electron microscope of SARS-CoV-2 are co-crystallized with main protease (6Y2F and 6W63) because peptide-like molecules offer a basic pharmacophore for the design of SARS-CoV-2, the main protease inhibitors. They are easy to synthesize and less toxic. The lopinavir, ritonavir, darunavir against Covid-19 disease are the best choices (Pant S. et. al., 2020<sup>[2]</sup>). The COVID-19 viruses are capable of infecting several human cells and encourage various pathogenic chains, (Zou et al., 2020<sup>[3]</sup> and Fried J et al., 2020<sup>[4]</sup>). The difference between SARS-Cov-2 and SARS viruses are in small sequence in the s- protein (Numbers of amino acids 1160 to 1400), (Petrosillo N et al., 2020<sup>[5]</sup>). About 80% recuperate from the illness without requiring distinct treatment and antibiotics have no effect on the virus, <https://www.mohfw.gov.in/pdf/FAQ.pdf>. Respecting Ayurveda, of India and China the proposed medicinal interventions for COVID-19 are Chyavanprasha, Sanjeevanivati, Brahma Rasayana, Swertiachirata, Swarnaprashan, Triphala and Trikatu, Moringaoleifera Pippalirasayan,

Kantakari Avaleha, Go Jihvadi Quath, and many others at different stages of the disease (Rastogi et al 2020<sup>[6]</sup>)

### Characteristics of COVID-19 Virus:

The nosocomial transmission though the Virus has diameter of nuclei is  $\leq 5\mu\text{m}$  in size and travels up to  $\geq 1\text{m}$  distance. Hence the virus in droplets and fomite can easily travel that distance. The inhibiting factors for survival of the viruses are surface and material they lie, medium of suspension, depositing mode, air temperature (SAT) and relative humidity (RH) and the strain variation. (Otter A., et al., 2011<sup>[7]</sup> 2016<sup>[8]</sup>). The stability of various corona viruses under different loading are given in **Table 1**

### Taxonomy:

There are seven virus conocidos of RNA samples of distinct four groups ( $\alpha, \beta, \gamma, \delta$ ). They are 229E ( $\alpha$ - coronavirus with receptor as CD13), NL63 (an  $\alpha$ -coronavirus), OC43, HKU1 ( $\beta$  - coronaviruses) and others are  $\gamma, \delta$  and aves y corona virus. They are commonly known as MERS-CoV ( $\beta$  coronavirus -Middle East Respiratory Syndrome), SARS-CoV ( $\beta$  coronavirus), and SARS-CoV-2 ( $\beta$  coronaviruses) (**Table-1**).

Table 1: The Corona virus; hosts, receptors and the disease caused (Weiss S. R. et al., 2005<sup>[9]</sup>)

The virus	Host	Cellularreceptor	The disease caused	Healing actions
<b>Group I:</b>				
229E (Feline Corona virus)	Human	Human APN (droplet/fomite)	Respiratory infection	Quarantine, A <sup>+</sup> Hygiene,
Transmissible gastro-enteric virus(TGEV) Porcine	Pig	Porcine APN ( AminopeptidaseN)	Enteric, diarrhea, vomit, dehydration	Vaccine sows pregnant. hygiene
PR (Porcine respiratory) CoV coronavirus, PEDv	Pig	Porcine APN	Res. infection by Aerosols	Swabs nasal; trachea, lungs
Canine coronavirus (CCOV)	Dogs	Canine APN	Leucopenia, Gastro-Ent. infection	Fecal-oral route; Vaccine
FCoV(Fecal-oralroute)	Zoonotic	Feline APN	Enteric infection	Break cycle, quarantine, high-level hygiene
FIPV(Fecal-oral route)	Cat	Feline APN	Enteric, neurologic& Res.Inf.	Quarantine, high-level hyg.
HCoV-NL63	Human	Not determined	Res. Inf., Croup	seclusion, identit y, phylogeny
<b>Group II</b>				
OC-43	Human	Nau5;9AC2	Res & Enteric Inf.	Inoculations
Coronavirus MHV-A59	Mouse		Ent.Neurologic,	

(Murine Hepatitis Virus)	CoV		Hepatitis	
Human coronavirus (HCoV-229E) (1960)	Human	Not determined	COPD	Quarantine, A+ Hygiene
SARS -CoV	Human	ACE-2	SARS(Aerosols, oronasal secretions)	No vaccines only isolation
<b>Group III</b>				
Infectious bronchitis virus (IBV) (Avian)	Chicken,	Tracheobronchitis, nephritis	Res. Inf, Hepatitis; Aerosols & ingestion of contaminated food with feces	inactivated vaccines, Good sanitation and testing
Turkey Corona Virus	Turkey	Fecal–oral route; Aerosol	Res. & Enteric Infec, diarrhea, depression, cyanotic skin	Inactivated virus vaccine

Note:Res: Respiratory; Infection: Inf.; Enteric: Ent.; Hygiene: Hyg;

Source: Wang et al., 2018<sup>[10]</sup>, Wang M., et al., 2020 [11]., Wang W., et al., 2020<sup>[12]</sup> Leparco-Goffart I, 1997<sup>[13]</sup>, Vabret A, et al., 2006<sup>[14]</sup>, Cavanagh D., 2007<sup>[15]</sup>, Bentley K. et al 2013<sup>[16]</sup>, Hai-Jian He et al 2020<sup>[17]</sup>, Fenner's Vet. Virology (Fifth Edition), 2016<sup>[18]</sup>

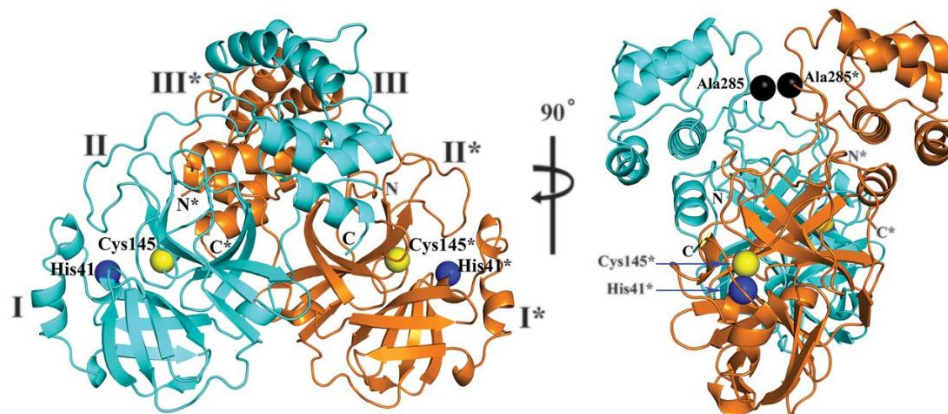


Fig 2: The 3-D molecular structure of SARS-CoV-2 M<sup>Pro</sup> in 2 different views (The protomers of the dimers are in light blue or orange., Amino acid (yellow for Cys145; E Protines), blue spheres: His41; Source: Linlin Zhang et al., 2020<sup>[19]</sup>

The Corona virus disease can be of any group from coronavirus found in Human, Murine Corona virus, Porcine Coronaviruses, in birds, animals are the Avian, Feline and Bovine coronaviruses (Weiss et al., 2005 pp- 636<sup>[9]</sup>). The hosts can be swine, horses, cats, cattle, camels, rodents, dogs, bats, rabbits, birds, ferrets, camel, mink, and Zoonotic species. The CoV contagions are indeterminate and subclinical, M Protein and domains in Roman numeric are S-proteins. (Source: Zhang Linlin et al, 2020<sup>[18]</sup>) are shown in **Fig 1 and Fig 2..and (Table -2)**

Table 2: Survival of various viruses over different surrogatedry surfaces (Otter A., 2016)

Corona virus type	Surrogated surface	Drying time	Sustenance period under Temp. and RH	Source of works
MERS CoV	Steel and Plastic	10mnts	Viruses survived >48 h & at 20°C/40% Relative Humidity. Poorly survive at 30°C Temp/80% RH (8 h) and 30°C/30% RH (24h).	van Doremalen et al. 2013, USA <sup>[19]</sup>
SARS-CoV	Plastic	visibly dry	Survived 5days but reduced by 1/10th in titration at Lab temp./ RH. Viable for >20 days. More stable at low temp. (28 <sup>0</sup> C to 38°C)/ at high RH (80–89% to >95%).	Chan et al., 2011 <sup>[20]</sup> , China
TGEV	Latex/nitrile gloves, N95 respirator	-	Lived with <10 <sup>2</sup> lessening on latex <i>etc</i> next 4 h. Sensed on some items after 24 h	Casanova et al., 2010 <sup>[21]</sup> , USA
TGEV, MHV	Gowns of HCU& stain - less steel	visibly dry	Both survive max of 28 days under lower temp., and low RH. TGEV and MHV have same survival properties.	Casanova et al., 2009 <sup>[21]</sup> , USA
HCoV-NL63,	Medical gadgets	--	Virus not sustained after drying but RNA (viral) detected up to 7 days	Muller et al. 2008 <sup>[22]</sup> , Germany
SARS-CoV, Herpes simplex & HCoV-229E	Polystyrene	visibly dry	Both survive > 6 days. HCoV-229E survive for < 72 hours..	Rabenau et al. , 2005; <sup>[23]</sup> Germany
SARS-CoV	disp. Paper, cotton gowns	visibly dry	Dose responses to survival times of all materials, high concentrate survive long (5mnt to 2days).	Mary et al. 2005 <sup>[24]</sup> China
SARS-CoV	cloth, glass, Wood paper, board, mosaic , filter, plastic	No tme	SARS-CoV can live, though under compact infectivity, for >72 h on all surfaces, >120 h on metal, cloth and filter paper. viruses survive for >72 h on cotton	Duan et al. 2003 <sup>[25]</sup> , China
HCoV-229E, HCoV-OC43	Aluminum, cotton gauze, latex gloves	15-45m (Visibly dry)	Viability less below evident levels next 6 h for 229E and 2 h in case of HCoV-OC43	Sizun et al. 2000 <sup>[26]</sup> Canada

### First COVID-19 Case in India

The first Covid-19 case was reported in Thrissur district of Kerala, India, who was a student in Wuhan University, Hubei province (population of 11mn) in China and returned then to India. The patient was stable and was cured after being monitored (PIB India, 30<sup>th</sup> Jan 2020) Since the pandemic has outbreak during 30th Jan 2020 (history: a student from China) in Kerala and first death occurred on 11th March 2020, Gulbarga, Karnataka (His: A judge returned from Jeddah Saudi Arabia). During last week of May, it is apprehended that the spread of COVID-19 has

reached the third stage i.e community transmission. The lock down/ sealing the red zone approach shall not be appropriate, so the defense to the pandemic like China, Australia sweeping lockdowns and mass quarantine approach. So combating the pandemic at the present scenario India needs the strategy of lock out to save economic contingencies and must be prepared to resume work, education, daily activities and business to normalize life and livelihood.

### Clinical Signs and Symptoms:

The present pandemic, COVID-19 is either asymptomatic or symptomatic. The symptoms gradually develop in a COVID-19 patient are tiredness, temperature or throat disorders (dry cough). At times these symptoms are associated with difficulties in breathing, aches, pains, nose congestion, conjunctivitis, and diarrhea, loss of taste / smell or rash on skins or of fingers / toes discoloration (**Fig 3**). The asymptomatic infected persons exhibit mild symptoms but not noticeable and they cure without medical procedure even. Patients with fever, cough (or both), associated with breathing snags /shortness of breath, chest pain, high pressure, aphasias, or loss of movement should be immediately need proper health care assistance.

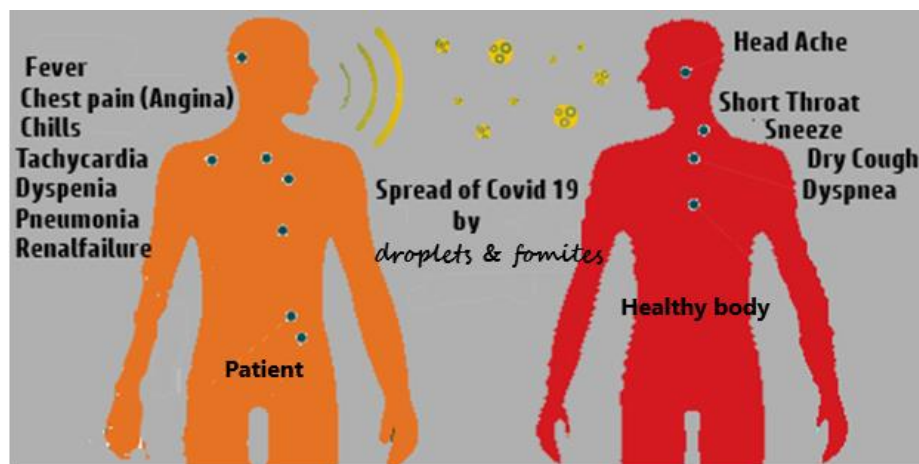


Fig 3: Transmission medium of Covid-19 from a patient to a healthy body

### Emerging Etiology of COVID-19:

Viruses of epidemics became virulent on earth are SARS-CoV in 2002 to 2003, H1N1 influenza - 2009, (MERS-CoV) in Arabia FY 2012 and at present is the attack of COVID -19. The mild and common CoV's found in human with common cold and nasal infections are HCoV-OC43, HCoV-HKU1 ( $\beta$ -CoV's); HCoV-229E, and HCoV-NL63 ( $\alpha$ -CoV's). The severe epidemics that the viruses caused in 21<sup>st</sup> century are SARS-CoV, SARS-CoV-2, and MERS-CoV whose mortality rates lies within 10% to 35% (Casela et al 2020<sup>[26]</sup>).

**Outbreak:**

P(4) lab at Wuhan is one of the famous virus lab of the globe reports COVID-19 is not related with the sea food market rather came from bats but unique virus (Shi Zheng Li 2020<sup>[27]</sup>). The novel Corona virus could have originated out of lab accident theory or from sea food wet market. The bat origin concept (but close) is still a controversy. Investigations at P(4) Lab, China reported that the incubation period of COVID Virus is within 3 to 7 days (generally) and can extend up to 14 days. The average rate of increase of patients by the epidemic is doubled is about seven days, People are only infected by COVID-19 from another similar patient through droplets and fomitecontact under activities like dry coughs, sneezes, or speaks within a safe distance of minimum one meter. The major droplet landing places are substances around the patient like tables, chairs, clits, handles, knobs and handrails but rarely as aerosols (avoid crowds). Even if nose, lips, eye and mouth contact can invite the spread of COVID-19. To avoid injection of viruses it is advised to repeated hand- wash or sterilization by alcohol based your hand rubs for a longer period of minimum 20seconds. The asymptotic patients at early stages can also transmit the virus to a fresh human body. So maintain a safe distance with everybody even if nearest kith and kin.

**Climate Change and COVID-19**

COVID-19 cases have out spread over 215 countries of the world. India; the 2<sup>nd</sup> populous country in south Asia has also whacked 70756 confirmed cases within last three months and death of 2293 deaths. The climatic parameters like surface air temperature (SAT), rainfall (R), actual evapo-transpiration (AET), solar radiation (SR), relative humidity (RH), surface wind speed (WS) and population density are correlated with of COVID-19. Hot and dry regions particularly arid and semiarid areas like Maharashtra, Gujarat and Delhi have more mortality cases except Tamil Nadu (coastal state). The numbers of patients in particular geographical confined area it is observed that mid altitude states have more cases than the low latitude and high latitude states in India.

The correlation between the outbreaks of the Covid-19 virus concomitant with climate change (CC) or economic status has been studied but evidences favoured occurrences and spread has not been correlated yet. But it should not be ignored that the transmission of viruses and infectious diseases depend upon factors like temperature, humidity, precipitation and wind. However it is noticed that there is multiplication in transmission in the areas where density of population is high, less social distance, isolation neglected and proper treatment is violated. Studies reveal that the fatalities are more among morbid patients. But the invasion of present COVID-19 infections around the globe undermines the health system, demographic density, under climate change as the origin/career are the animals and they indirectly associated with climate change. The present drivers of the pandemic or endemic viruses are zoonotic and undergoes continuous mutations/transformations like camels, bats, pangolin or aquatic species, it cannot be ignored that the viruses are not influenced by global climate change (Gupta A et al, 2020<sup>[28]</sup>).



**Anthropogenic Factors:**

The most observed scenery of the pandemic virus outbreak is in slums within cities with high population density and large numbers of persons in a dwelling without hygienic environment. More over during Anthropocene epoch the life span has surged up and the morbid geriatrics are large in number make milieu susceptible to the pandemic. After lockdowns the stable life styles is under chaos and encourage rural migration to the parental places. The unemployment and poverty has forced urban dwellers in the affected places to gather, move together 1000's of kilometers by walking, cycle or other means and scatter infection more.

**The COVID-19 among Geriatrics:**

The higher age groups are toughest hit with problems of hyper tension, cardiovascular diseases (CVD problems), diabetes, or malignancy are at high risk. But COVID-19 infections enhance mortality to morbid patients. However human of all age group has been found to be affected (Shereen M. A., 2020). In contrast to younger age group, geriatrics is with CVD, Emphysema (COPD), hypertension and diabetes and has reduced ACE2 levels (Angiotensin I Converting Enzyme 2). A person with reduced ACE-2 level increases the risk of overstated inflammation which further reduces the level of ACE2 during COVID-19 infections. Depending upon geography and population density the severity fluctuates (Pan X W., 2020<sup>[29]</sup>). Aging of the immune system in geriatrics are due to reduced generation of T cells (Duan et al., 2003<sup>[29]</sup>).

**The Pandemic among Pediatrics:**

It is accepted that children of age group (2-15 years) are spared from the ravages of the pandemics and if affected recover earlier with medical assistance. But COVID-19 has not spared children who are prey to the solemn life abating disease (Odisha a small state with 624 COVID -19 patients 20 are children and they are safe). The sequela of infections initiate with symptoms like raised fever of 102-103<sup>0</sup> F, pain in abdomen, diarrhea, rashes followed by heart disease, including cardiac arrest and finally death.

**Vulnerable Group:**

The most vulnerable Persons, during the crisis are geriatrics age group, patients from chronic diseases, teens, and children etc. The great warriors those who fight against the COVID-19, like medical personnel, police unit, health care providers, supporting groups, first responders and the administration people are super vulnerable.

**SARS Corona virus-2 in animals and pets:**

UNICEF has reported that the domestic animals, the bovines and some zoonotic animals in human contact are susceptible to the infection. It is told that the COVID-19 source is bat or pangolin but yet to be confirmed. However there is no report that these zoonotic animals and pets can transmit the disease among themselves and to



[human./www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses](http://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses).

### **Protective role of ACE 2:**

Li Lin, MD, PhD, and JiagaoLv, MD, PhD, Division of Cardiology, has mentioned that ACE2 neutralizes the surficial Spike protein of the COVID-19, barring the spread of the viruses. ACE2 has a defending character in heart diseases and severe lungs damage. The rhACE2 along with Fc part accepted as encouraging drug for treatment of COVID- The Angiotensin converting enzyme inhibitors (ACEIs)/ARBs (angiotensin receptor blocker) can upsurge the activity of ACE2 in heart 19linli@tjh.tjmu.edu.cn. The smoking group are mostly affected and shall cause significant upturn in the ACE2 level, the protein used by the virus to go into human cells

### **Coivid 19 and Ayurveda:**

Charaka Samhita (the gita of Ayurvedic medicine) has opted for Quarantine or stay at home for “JanapadaDvamsaVyadhi”, i.e. epidemics. Vasant Lad the pioneer Ayurveda doctor has proclaimed model daily routine (dinacharya), Ritucharya (seasonal regime), Pranayama, Yoga and indigenous food habits shall keep us away from COVID-19. Other AYUSH recommendations are taking always warm water, choice of cooking spices are Turmeric, Cumin, Dhaniya and Garlic. Immunity promoting medicines are dasily intake of Chyavanprash, herbal tea / Kadha made from Basil (Tulsi), Cinnamon (Dalchini), Black pepper, Shunthi (dry ginger) and Raisin (Munakka). The prioritized immune promotor are daily consumption of cow’s milk with turmeric. Sesame oil / Ghee are best choices for nasal inhalation and for dry cough/ soar throat take steam inhalation adding mint (fresh Pudina) or caraway seeds (Ajwain) <https://www.mohfw.gov.in/pdf/ImmunityBoostingAYUSHAdvisory.pdf> and Rastogi et al, 2020<sup>[6]</sup>.

### **Common Testing Kits:**

Diagnostic detection of COVID-19 is in highly demanded to identify the patients. Most of the patients in India are highly asymptomatic but contagious. The SARS-CoV-2 is a RNA virus which found to mutate easily to sustain the fluctuating climate and environment. Serological diagnosis is preferred but of less help at the peak of Pandemic (Alfonso et al, 2020<sup>[30]</sup>). Present trend for diagnosis is RT-PCR (rRT-PCR: reverse transcriptase and polymerase) chain-reaction. In severity; the computed tomography technique (CT) and X-Ray helps to diagnose scratches of pulmonary pneumonia of lungs along with medical symptoms.

SARS-CoV-2 pathologically diagnosed either by RT- PCR and serology. The severity of infection relative to symptom onset is also taken into account. The clinically timeline of diagnosis for detection of COVID-19 is reducing day by day which is valuable for HCU’s, public health and scientists. The data is received from non-immune compromised persons and under

political stress. The RT- PCR positivity and sero-conversion is variable among stratified groups (age, comorbidities, asymptomatic vs. symptomatic and population density Slum areas)

The viruses enter the receiver's respiratory tract, nasal epithelial cells or conjunctiva and as aerosol contamination in a crowded confined area. It is also claimed that the deposited droplets in substances (live for few hours) when accessed on contact can get an entry to a healthy human body. Viral reproduction starts within the epithelium of nasal track and nasal swabs contain more COVID-19 viruses of the patient, Doremalen et al.,(2020)<sup>[31]</sup> and Sungnak W et. al.,(2020)<sup>[32]</sup>.

#### Four Diagnosis Stages of Covid-19:

**Stage I:** It is the stage of 1<sup>st</sup> appearance (early inflection phase) of the mild respiratory tract diseases. Positive cases emerge out isolated places and the travel history and source of every patient can be identified which is very low? It is under virus replication phase. The associated clinically mild symptoms of fever  $>37.6^{\circ}\text{C}$  associated with dry headache, dry-cough, and diarrhea .The respective clinical signs are Lymphopenia (reduced lymphocytes in blood cells), increased Lactic Acid Dehydrogenase (LDH) and D fragments of the fibrin protein (d-dimer).

**Stage II:** It is the pulmonary phase where virus replication is higher and patient develop pneumonia. The transmission of the virus to patient having travel or contact history is known. The transmission occurs due to contact within friends, family and in the workplace around the patient. After a patient found +ve, then his probable contacted person must be traced and remain in quarantine/ isolation under strict screening, social distancing, and lockdown. ICMR claimed still India is in the 2<sup>nd</sup> stage with doubts in some highly virulent states. The clinical symptoms in this stage are pneumonia, dyspnea and hypoxemia (mild), and Lungs Oxygen saturation is  $>94\%$ . The clinical signs are procalcitonin (PCT) normal, abnormal lungs imaging with higher ALT/AST (enzymes aspartate transaminase (AST) and / aka alanine aminotransferase (ALT) become high (normal is 0.8).

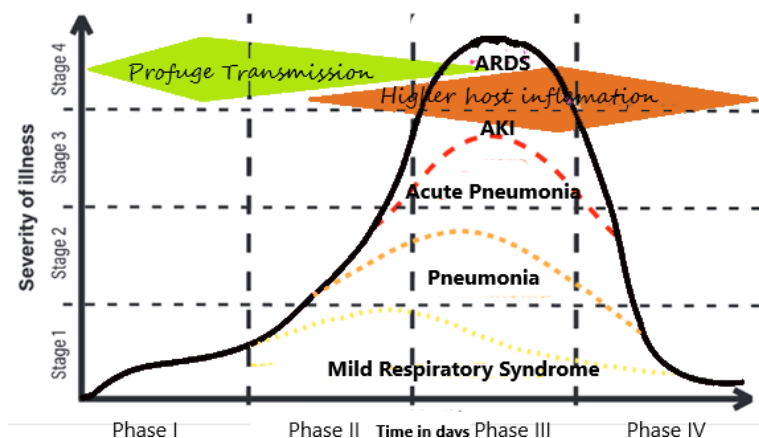


Fig 4 : The different stages and Phases of the COVID 19 disease

**Stage III:** This is the hyper inflammation phase of community transmission. The 3rd stage of the disease is uncontrolled stage. The infection rate and mortality rate upsurge. The patient's history is in dark and transmission is community transmission. Curfew/ Containments/ and lockdowns demand inevitable to restrict the transmission of the virus. It has the peak host inflammatory response and at the severe pneumonia stage. This stage is linked with clinical symptoms like Acute respiratory distress syndrome (ARDS), shocks, acute kidney injury (AKI), neurological symptoms, myocarditis and pulmonary embolism (PE) that occurs during blood clot (deep vein thrombosis) (DVT). The clinical signs are systemic inflammatory response syndrome (SIRS) markers, high C-reactive protein (CRP), Interleukin 6 (IL-6), LDH (lactate dehydrogenase), ferritin, d-dimer etc.

**Stage IV:** Then during the 4th and closing stage of transmission occur slowly though the disease has already been widespread and outbreak as an epidemic. The number of cases and deaths begin rapidly multiply. The countries like Italy and the USA have reached this stage by mid of month May. After reaching this phase the people of the area shall develop hard immune to the virus and enters called the recovery phase. There will be relief of clinical symptoms. India has developed neutralizing anti-COVID-19 drugs like IgM and IgG immune-globulins (anti bodies in the blood) (Fig 4)

Summarizing that during initial stage of infection, the virus replication and shedding is rushing during first phase-I (4–10 days). Latter accompanying the cytopathic consequences of the virus replication and mutation are seen in the patients and the patient moves to Phase II. With course of sufferings the inflammation accelerates and the patient leads to multiple organ failure (MODS), acute respiratory distress syndrome (ARDS), acute kidney injury (AKI) and deep venous thrombosis (DVT) and pulmonary embolism (PE).

#### **Therapies and Joining Vaccine Race:**

Hydroxychloroquine, famotidine, favipiravir, and tocilizumab are the list of drugs to be used against Covid-19. However these are antiviral therapies like remdesivir, chloroquine, hydroxy chloroquine (which changes the receptor but application is restricted) and coalescent plasma transfusion (Stage I, II and III) are the popular drugs. During 2nd stage onwards the therapies for immune-suppressions are corticosteroids, IL-6 inhibitors and hemofiltration. IgG Elisa Kit developed in India which is indigenous testing kit for Covid-19 on 10.5.2020. In addition during all the stages Vitamin-C, Vitamin D3 along with immune modulations and antithrombotic medicines like aspirin, Zinc, LMWH/NOAC are prescribed.

Plasma therapy should be undertaken only after testing of diseases like HIV, AIDS etc.. Plasma therapy can be under taken in case patients like TB, old people, poliovirus *etc.* which reduces the viral load in the acute patients. Side effects are transmission from the donor to acceptor, immunity reduces, albumin and clotting factor clotting of blood increases. In which stage the plasma therapy and induction of antibody shall be given is under question?

The latest therapeutics dose is grouping of interferon( $\beta$ -1b), lopinavir-ritonavir, and ribavirin added with proper medical attendance has successfully worked in handling mild- moderate cases of COVID-19 by shortening the extent of viral shedding and transmissibility (Evan Fan et al., 2020). For novel corona virus there is no vaccine found yet and there is urgent search for drugs for the diseases (Zhavoronkov A. et al., 2020<sup>[33]</sup>)

### Deaths Statistics of COVID-19

The fatalities due to COVID-19 for 11 major countries including India was considered for two weeks. The slope of the deaths of India and USA indicate that USA has steeper slope whereas India has a flatter slope. The data indicates that Great Britain, Italy, Spain and France are the four countries has sacrificed higher lives in the pandemic after USA. India has more number of deaths from 7th of May when there was rampant migration of unemployed famished workers from affected parched states started rushing to unaffected states (Fig 5)

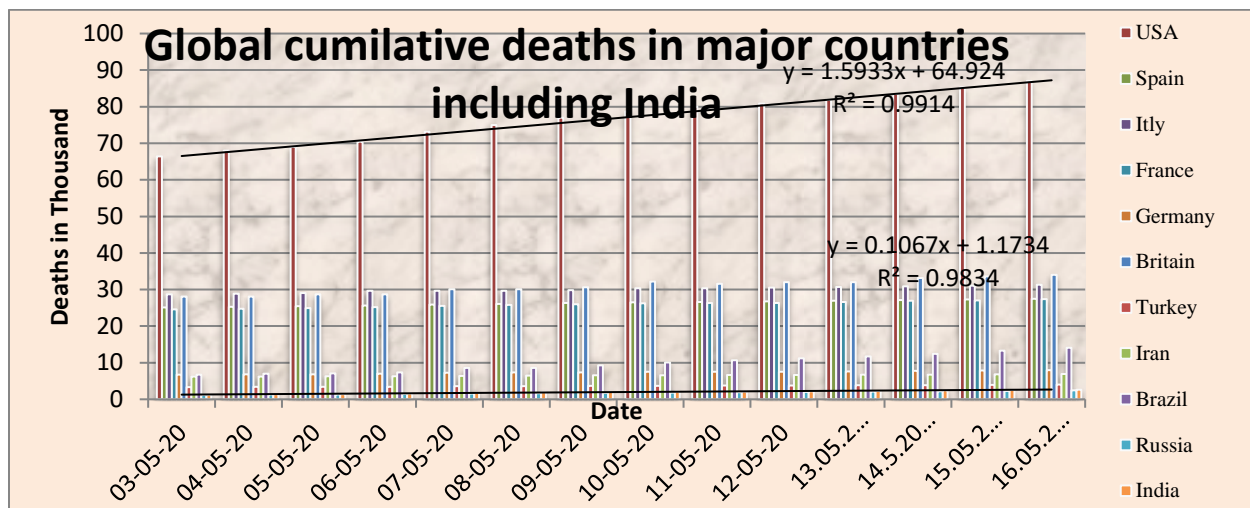


Fig 5: Cumulative total of deaths in major affected COVID-19 states in the globe including India during mid spell of the pandemic.

### Confirmed COVID-19 Cases:

As per the status on 16th May 2020, Europe is worst affected with confirmed cases more than 1.8mn and death toll mounting to 160thousand (Fig ). The European community state Slovenia was least affected and declared lock out as total confirmed cases were 1664 and death toll 103 for population size of 2mn. On the other hand the USA is the worst sufferer as on date the number of mortalities are reached 88.67thousand with confirmed cases 14.88 million. Spain is affected next to USA. But the numbers of confirmed cases is rising in Russia to a tune of 276.51thousand on 17th May. The confirmed cases is also rising in India from the 7th May due to home return of the unemployed migrant labourers from crowded cities to their home land. The condition of Spain is recovering and started lock outs but there is hope for 2nd phase attack from the night clubs of Spain (Fig 6).

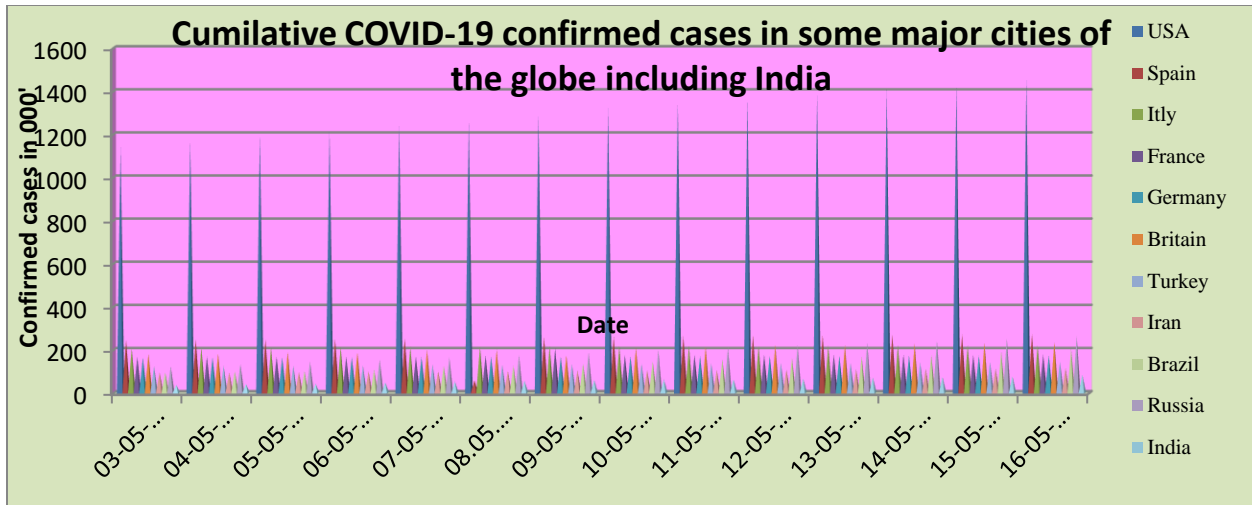


Fig 6: Cumulative total of some major affected COVID-19 in the globe including India during mid spell of the pandemic.

**Covid-19 Infection Statistics in India:**

The Coronavirus in India had its first death from March 15<sup>th</sup>, 2020. As on today 19<sup>th</sup> May 2020 the confirmed cases has raised to 101261 India: and the viruses succumbed 3164 live in almost all the states of India. As on date 20% of COVID cases is in Mumbai and the state Maharashtra has 33% Corona patients and the cases are rising. In spite of stringent follow up guidelines and implementation of quarantine and isolation procedure the disease is mounting and spreading from Kerala to almost all the states (Fig-7)..

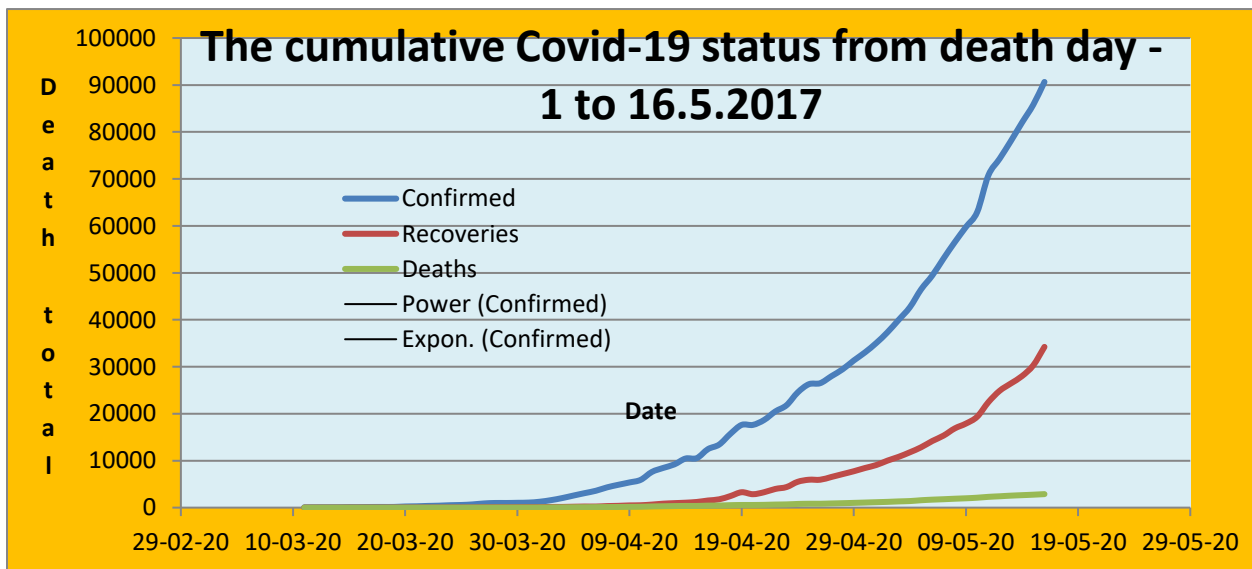


Fig 7: The cumulative COVID-19 status of India, number of deaths, recoveries and confirmed cases. Source: <https://www.statista.com/statistics/1104054/india-coronavirus-covid-19-daily>

**COVID-19 in India**

After a long spell of strict lock down in India, the administration has opted relaxation to unemployed migrant labours from industrial cities. As a result there is a sudden acceleration of spread of infection and deaths related to journey from the work place to their native area without buses, trains and flights. The confirmed cases are rising along with Corona deaths.

**Not Manmade or Genetically Modified:**

WHO claims the virus is a killer but the mortality percentage is very less. Similarly the clinical recovery of mild infected patients are about 10 to 14 days but exceptionally Italy has observed that after 20 to 40 days the mild patients still behaving +ve to the virus. So the quarantine period has been extended in India up to 28 days. As per NDTV (Updated: April 30, 2020 09:22 pm IST) as per report of Director of National Intelligence, the scientific consensus that the COVID-19 Virus did neither originate from a research laboratory or genetically modified, but zoonotic.

**Best Practices during COVID-19 Pandemic:**

If anybody has contact with COVID-19 patient, he is prone to infection. The preventive measures to avert contamination and transmission from COVID-19 are:

1. Wash/sterilize your hands frequently for 20 secs with soap and water, or hand wash them with hand rub sanitizing reagents.
2. Stay home or self-isolate when one has minor symptoms like cough, headache, fever, till you are well.
3. Maintain minimum 1m distance between you and all particularly when your neighbor is coughing, shading the running nose or sneezing.
4. Avoid touching your face, eyes, mouth and nose.
5. Protection of mouth and nose during coughing or sneezing and spitting at a distance.
6. Stay home if anyone has symptom of slightest fever, cold and cough
7. Abstain from lung weakening activities like e-smoking and smoking
8. Avoid crowd, unnecessary travel and physical distance
9. Up-date infection statistics from trusted sources and discard fake information's.
10. Falling ill without malaria/dengue fever, in an area it demands self-isolation. Stay away from COVID-19 patient and has initial stages of symptoms, require self-isolation and monitoring. Early stages of the disease with mild symptoms are susceptible so early self-isolation is the pre-requisite. Anybody without symptoms, but has history of exposure to an infected person, self-quarantine is urged.

The lockdowns are for breaking the chain. It is prompted to watch, read, or listen to good standard stories cinema and songs as repeated hearing about the disease may upset you. Exercise regularly, sleep more and avoid tobacco, alcohol and drugs. Connect with family and do some useful works to engage yourself.

**What Covid-19 has given us:**

As the uncertainty of the pandemic is continuing, the country is preparing itself to live with the virus for the long run to return to all sectors concomitantly like business, education, day today works including social, political and economic activities with care & precautions. SARS CoV-2 is one among the global hazards that threaten our existence leading to 6<sup>th</sup> mass extinction. The spread of pandemic is slowing in some countries posing a shine of hope. But the political and socio-economic stigma has risen up and the vulnerable countries are in ideological clash. Millions living hand to mouth, waiting road side to travel home or dwelling in slums without work and food like the prison soldiers (crowded refugee camps) in world war I or II has named the Pandemic as cold world war.

- i. **Confinement in lockdown:** The Virus has put us within four walls in fear more than a visible and perceiving a lion roaring at doorsteps.
- ii. **A healthier climate:** The atmosphere GHG gases has fallen down, the river water has become clean, less accidents and cool and calm environment all around.
- iii. **Restricted movement:** Imposition of quarantine has banned transportation, tourism, community works, celebrations etc but always masked like ladies keeping their faces at the back of Odhani or Purdha.
- iv. **Digital Payment:** Though digital payment was stressed upon to apriori, the COVID Pandemic made it practicable in totality.
- v. **Washing hands and intakes:** The COVID 19 has forced us to sanitize and wash for a long interval any food stuffs even the ice cream before eating. Washing hand for 20sec shall need extra 20liters /day/ person shall stress upon the water demand.
- vi. **Sanitizing whatnot:** Regular sanitization every nooks and corner even the coins and currencies received from the stores and banks. The old people's habit of keeping everything for all immediate needs in pockets has become obsolete.
- vii. **Work from Home:** Since movements constrained and social distancing imposed the old work culture within office premises has been waived out and replaced by work at home where there is no time, uniform, courtesy constraints and you are the head of your office at your residence. The SMART CITY concept has encouraged the satellite cities near the Cosmo polis resulting more employment and work from home..
- viii. **Less physical contact:** The time has come that the parents shall think before hugging their school going children. Love, affection, sympathy, empathy has lost within an atmosphere of the Corona virus.
- ix. **Maximum surge in use of internet:** Upsurge in use of internet has steeply slowed down the speed. As per Economic Times of 10<sup>th</sup> Apr., the Wi-Fi download speeds has depleted to 35.98 Mbps in Mar 2020 from 39.65 Mbps in Feb-2020 and the mobile download speeds has fallen from 11.83 Mbps to 10.15 Mbps during the same period.
- x. **Mission clean India:** COVID-19 has taught us to be hygienic and more exercise on Mission clean India of the Government. The pandemic has given us oneness i.e no distinction between cast, creed, religion and region.



- xi. **Active Media:** The fourth pillar has become more active and covering but at times repetitive and boring like the replicative virus.
- xii. **Novice activities like Quarantine, isolation and physical distancing:** Quarantine is limiting actions or extrication people with COVID-19. Isolation aims at sorting out people who are COVID-19 infected. Physical distancing is bodily spacing out. Few other terms are lock down, Containment zone, access control zoning and hotspot zone along with colour coding red, yellow and green
- xiii. **Rise in psychic and ophthalmic diseases:** Home isolation, fear and anxiety causes strong emotions in geriatrics, patients and children. Stress during the pandemic causes insomnia, change in food habits, chronic health diseases, affecting mental health that increases consumption of tobacco, alcohols and psychotic drugs and domestic violence's. Conjunctivitis can be symptom during COVID-19 infection.
- xiv. **Buffer and containment zoning:** In addition to red, yellow and green zoning is edging the life style of the Indians to different compartments. The migrated labours and their family are refused for days in their native place like social punishment for killing cows as per Hindu custom.

### What COVID 19 has stolen from us?

The COVID -19 has become a pandemic and affected 4.629 mn confirmed cases and 308.654 thousand deaths till 00 GMT 16<sup>th</sup> May 2020 (Worldometer) covering 215 countries. The pandemic has not discriminated young and old, rich or poor, cast, creed and religion. The loss of life, suffering from the diseases, political, social and economic changes are the dark side of the pandemic. The pandemic has stolen or day today activities, movement, livelihood and loaded us under stress of unemployment, hunger, stagnation, economic instability and the tourism sector (Fig 8).

### Economic Impact of COVID-19

The pandemic has strapped the economy of the globe to a downturn. The GDP has started drowning and economic growth is jeopardy. During the fiscal year 2020, global recession is marked in the economic sector of the developing countries like India. The closure due to lock downs and containment zoning has disrupted the regular income, industrial activity, transport Industry and induced market instability. The Impacts observed are rise in unemployment, distraction of supply chains, downscaled Government revenue, and wrap up of health care unit / tourism activities, depletion of fossil fuel consumption and complete jeopardy of consumer activities. The lack of vaccine, the pandemic COVID-19 has become non-abating with a stop gap due to social distancing and locks downs. The rising pandemic activity in major 215 countries of the globe has forced IMF to reduce its economic GDP growth from 3.3% at the start of the year to 3% during fig end of April-20 (Nathan N., 2020<sup>[34]</sup>).



Fig 8 :The solitary roads in Cosmo polis of India during Lock down due to Corona pandemic (Source:<https://www.outlookindia.com/magazine/story/how-coronavirus-pandemic-will-impact-the-economy-and-you/303014>)

### **Post Lockdown war:**

The count of COVID-19 patients is mounting day after day and there shall be resurgence when Lockdown will be lifted. A well planned and calibrated strategical approach is essential to fight the coldwar during post-lockdown period. The lockdown period has earned zero revenue or nominal revenue has been earned for about two months. The disparity between the wage rates needs to be addressed.

### **Migrant work force:**

India's migrants forcing to rural from urban are getting ever more complex. Interstate migration of works has demanded this lock down period to identify them and make a list of migrant works. It should be mandatory to register the employees working in engagement in hazardous activities. The retrenched workers in context to COVID need to be opens including women during night time needs to be under prevision of law.

Neeraj Goel, Director & Regional Manager – India SEL hasreported that theuncertainty shoots up insecurity, insecurity prompts panic. The pandemic has forced the migrant wage earnersto return back to their native villages andtowns in anticipation of safety and security. They have over-looked that unemployment at their native place was the cause of their mass exodus. A small state like Odisha has population of 40 million have 1million of migrant works without any record. A minimum wage rate needs to be implemented i.e. one nation- one ration card, through FPS automation. All workers need appointment letter with managing occupational safety and health checkup coverage and social security to unorganized sectors. They have migrated because they had no job. So all card holders must be under food security where their number is 80millions.

**MSME Sector:**

The MSME (Medium small and minor establishments) sector is employment to millions of works. They must be assisted loans but not assistance which is most affected. As a assimilating and renovating major after myth of the crisis, they must be attended with utmost priority as post pandemic reconstruction. The well set sector has been disturbed with a conflict between the owner and the worker. Renewal and Modernization shall be delayed for months together hampering the economic progress of the state. As kick start to save, survive and boost the frozen sector the need for the state is economic packages, credits, loans are the players to be stimulated. As economic recovery the cut wages, return of labours after lock outs should be viewed for shake of clarity and the resumption of work sector.

**Housing and Construction Sector:**

Migrant poor workers to be provided with affordable portable basic rental housing is needed incentive wise housing complexes and convert government funded houses. All migrant workers should have roof to live in, electricity and portable water i.e. all basic utilities. The lower strata of the middleincome group (0.6mn to 1.8mn INR/annum) should be benefited to have affordable houses on loan. Which will sum up to 3.5lakhs shall be added with 2.5 lakhs has been extended for one year more and people shall get benefit credit link, shall benefit the construction and industrial sector. The labour laws for the whole country should be one but not statewise

**Street vendors:** There are 1.5million street vendors existing in India. They have become pauper during the last three fixed lock downs during the cold world war. These street vendors also share to a large proportion of the migrant community. They must be given initially startup incentives to start their business and through digital payment.

**Marginal Farmers, Tribal people:** Reoccupation after restart of the utility, industrial and business sectors, people shall be benefited to create huge job prospective to generate labour. Alternative choices are engagement in the environment sector through afforestation and plantations. Additional funds to be given by the federal institution to marginal farmers to improve during the post-harvest Rabi works and start preparatory works for khariff and rabi through cooperative banks which shall reach the rural India. Concessional credit should be provided to the poorest farmer, fishermen and veterinary workers lacking Kissan card.

**Milestone for venturing Debt:**

Aggressive policies and extension of work hours shall not bring past settings at education, industries and construction and business sectors. Venturing debt which is encompassing the Indian private-capitalistic market needed but not the successful step for prompting the ruined economic and educational sector due to the pandemic. Strong determined effort for recuperation of the old progressive status is essential or otherwise there shall be wealth erosion for the investors shall occur like the Franklin FoF (Franklin Templeton's fund of funds). Rather we have

to shape our sales strategy made by India's carmaker; Hyundai betting upon subscription model, leasing, and old-car business to woo the consumer.

### Conclusion:

Freedom is indispensable to normal life which provide strength to let the people live. Denying of liberty and providing uncertainty drives a healthy society to be at daggers drawn. COVID-19 has deprived the autonomy and authority of individuals through isolation, quarantine and stay at home. The uncertainty is between life and livelihood.

Fighting Corona is not only nation's battle but also global crisis. The lessons learned from the current pandemic corona virus contaminated through zoonotic animals from bats or pangolin, transmitted to Homosapiens species throughout the globe. The contagious ailment with recurrence has preventive vaccine yet to be tested and the disease management is at the smoky horizon. The recent developments and the governing measures to the Pandemic Virus COVID -19 is from Wuhan shrimp market to most of the virology laboratory of the earth:

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