

# I am Corona-A Disaster or a Corrector?

Shobha Misra\*, Bhakti Sharma

<sup>1</sup>Department of Community Medicine at P D U Medical College, Rajkot, India; <sup>2</sup>Second Year MBBS Student at Zydus Medical College, Dahod, India

## ABSTRACT

The crisis of the Covid-19 that we are currently experiencing has been a huge turning point in the life of many of us, but will certainly bring a radical turn in our lives. We can survive well through adaptation and harmony so that we can change the way we handle the impact of the same on us. But who is responsible for such a situation? The answer is human beings. And one does not need to have a scientific paper on this. If we want a better life, we have to treat nature better. That's the message of Corona for us as corona is also a part of nature. The current article throws light on some of these behavioural changes required to preserve the nature and take urgent steps to correct the wrongs done to the nature otherwise a small creature like virus can bring the world to a standstill.

**Keywords:** COVID -19; Corrector; Destroyer; Disaster; Pandemic; Nature

## INTRODUCTION

Today, I just want to roll about and think if I should take pride or should feel pity to bring round 212 nations and territories on their knees including superpowers and figures, worldwide. And by the time you read this, the statistics will only ascend further, bringing the most powerful beings, down. Today I took out time to pen down, to narrate one of the greatest tales of history, 'The story of my life' which ended that of millions, "THE EMERGING DESTROYER OF MANKIND AND SAVIOUR OF MOTHER NATURE, THE CORONA". Up till 12<sup>th</sup> May, 2020 of the small handful of symptomatic humans tested globally I caused 4.27 million cases and 2.88 lacs (288 K) deaths worldwide [1]. The countries showing highest numbers infected by me are USA (1.3 Million cases and 81,795 deaths), Spain, UK, Russia, Italy, France, Germany, Brazil, Turkey, Iran, China, India, Peru and Belgium. In India I caused 70,756 positive cases and 2,293 deaths, inflicting almost all states and union territories (32) [2]. But you can't guess? I can infect all of the over seven billion humans globally and 130 crores of Indian who are susceptible. I do not want to suffocate myself and I shall keep finding my host, after all I have come to stay with you, until my natural history is complete, i.e. my endemic level. I am uncanny isn't it?

## MY ORIGIN

I was first identified as the cause of an outbreak of pneumonia of unknown cause in Wuhan city, Hubei Province, China, in December 2019, with clinical presentation of a respiratory infection with symptoms ranging from mild common cold-like illness,

to a severe viral pneumonia leading to acute respiratory distress syndrome, that is potentially fatal. The earliest case of my infection is thought to have been found on 17<sup>th</sup> November 2019.

Since then, the crisis has escalated rapidly, with the WHO first declaring a public health emergency of international concern on 30 January 2020 and then formally declaring it a pandemic on 11<sup>th</sup> March 2020. I spread rapidly from a single city in China to the entire country in only 30 days, and now am thriving in all corners of the world. Maybe I am one of the few things from china which lasted this long, still continuing. But how did I come in contact with humans? What brought me here? Well, it is not all my fault, human practices made a way for me to enter your world. A submerged memory rose in my mind, to explain this I will have to dig out in the past. There are political and scientific explanations for the same, after all humans keep fighting amongst themselves for power, mean while others take advantage like me.

My family is responsible for causing illness in people (e.g. common cold, SARS, MERS), and others that circulate among mammals (e.g., bats, camels) and birds. Rarely, animal Corona Virus can spread to humans. A majority of my victims in the initial stages of this outbreak reported a link to the Wuhan South China Seafood Market, a live animal or "wet" market, suggesting my zoonotic origin. Stories suggest that I may have been derived from a recombinant virus between the bat corona virus and an unknown origin corona virus, probably ant-eater (fusion virus), after all my world is still a mystery for you. So, pangolins and bats were my intermediate host and door to enter the world of mankind, as they are my reservoirs.

**Correspondence to:** Shobha Misra, Professor and Head, Department of Community Medicine at P D U Medical College, Rajkot, India, E-mail: shobhamisra@rediffmail.com

**Received:** May 18, 2020; **Accepted:** June 08, 2020; **Published:** June 15, 2020

**Citation:** Misra S, Sharma B (2020) I am Corona-A Disaster or a Corrector? J Med Diagn Meth 9:293. doi: 10.35248/2168-9784.2020.9.293

**Copyright:** © 2020 Misra S, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

And now I am not confined to bats any more, I am a part of your community, causing human to human transmission just like what was done in 2002 causing SARS and in 2014 causing MERS. Some say that I was created in a laboratory of Wuhan-hey you; crack this one for me, even I don't know. If I am a fusion virus, I shall not be able to go back to bats or ante-eaters and so now humans are my best hosts. Your body is reacting, I am multiplying very fast in you, in a second, I can make 100 copies, after all both of us need to survive.

### My naming ceremony

I have been allotted many names lately, didn't know I was so popular among humans, like-kung fu virus, novel corona virus (2019-nCoV), Wuhan virus etc. But what's in a name? The humans believe that not your name, but you are remembered by your deeds and the impact you leave behind for generations. I have become famous (or infamous) for the same. But I will do what I have been destined to, for what I have been evolved.

### THE REAL ME

But who am I? Just gulp your fears and know me. Officially WHO names me as Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2), responsible for causing a potentially severe acute respiratory infection-Corona Virus Disease 2019 (COVID-19). Now, know me closely and microscopically. I am a large pleomorphic spherical particle with bulbous surface projections with a diameter of around 120 nm, very small to the human eye, but am wiping out a large portion of human life. My envelope appears as a distinct pair of electron dense shells (Figure 1), consisting of a lipid bilayer where the membrane (M), envelope (E) and spike (S) structural proteins are anchored, giving characteristic appearance of a solar corona, probably that is why I have been given this name. Smart humans, huh?

My core is composed of a nucleocapsid, consisting of nucleocapsid (N) protein bound to the positive-sense single-stranded RNA genome, which makes me invincible. My strengths are my lipid bilayer envelope (maybe that's why you are instructed to wash your hands with soap), membrane proteins, and nucleocapsid that protects me from your immune responses, was this difficult to crack? Maybe that's why it will take you so long to make vaccine against me.

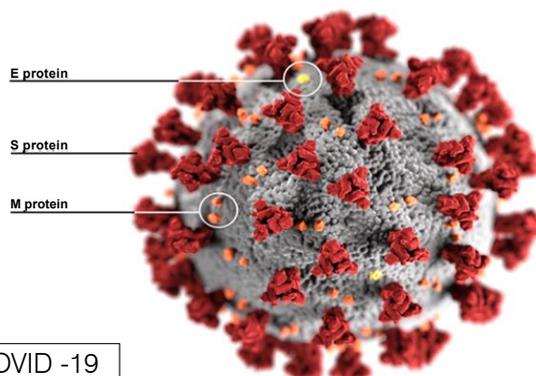


Figure 1: Structure of Coronavirus.

My family is very proud of me lately, my entire clan believes that I am their most successful and celebrated successor. Let me introduce you to my family tree. After all, it's all in the genes. The

International Committee on Taxonomy of Viruses has confirmed my name SARS-CoV-2 owing to genetic similarity to the SARS-CoV virus and bat corona viruses, with differences in disease spectrum and transmission [3]. I belong to the Coronaviridae family (known as corona viruses) which are capable of causing illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS, 2014). I am the seventh known corona virus to infect people, after my siblings 229E, NL63, OC43, HKU1, MERS-CoV, and the original SARS-CoV, my great ancestor. I am ecologically diverse, can circulate between animals and humans.

I am a member of the subgenus Sarbecovirus (beta-CoV lineage B), having a unique ability of incorporation of a polybasic cleavage site, a characteristic known to increase pathogenicity and transmissibility. Owing to my size and genomics sequences, I can mutate drastically, even before you prepare a vaccine or medication against me, I might have taken a different form. Size does matter right? By 30 January 2020, 42 of my genomes had been isolated from Wuhan and reported by the Chinese centre for Disease Control and Prevention (CCDC).

The epidemiologists are working hard to understand me and are using epidemiological model to study my impact based on three factors: my infectivity and virulence; your susceptibility; environment favourability. But I am sly and tricky.

### Agent

According to a Chinese study in Peking University on 103 patients, they identified two strains of mine, the original L type (Wuhan) and S type, S type which is a mutated type: but their study found more of L type. It suggests that L type is more aggressive mutated form of mine. But overall, my infectivity is pretty high with a favourable mortality profile which is actually pro-epidemic in Italy and US. But don't worry, I shall not mutate too often otherwise it will be difficult for you to develop a vaccine against me. I can be destroyed by alcohol 70%, washing hands with soap and water and UV light can break me too. Bactericides won't help (because of my nature), so do vodka, vinegar or spirit. I am virulent and reasonably infective, can infect 2 to 2.5 of you ( $R_0$ , reproduction number).

How do I spread the disease? Well the answer and I are in the air, everywhere around you, the air you inhale. I am primarily transmitted from symptomatic people (those who develop symptoms after exposure) to others who are in close contact through respiratory droplets while coughing, sneezing, talking or spitting, also by direct contact with infected person or by contact with contaminated objects and surfaces. I can survive for 24 hours on card board, four hours on copper, two days on steel, three days on plastic and a few hours (aerosols three) in droplet form in the air attaining maximum density with in distance of 6 feet or more (hence your recommendation for maintaining a distance of at least 6 feet). I can even thrive on your commonly used gadgets the mobiles and others without which you cannot survive. I am cosmopolitan you see. I am in blood, saliva, tears, and conjunctiva secretions and faeces.

Being a virus, I am a link between the living and non-living as I am merely a particle when outside. But what happens after I enter your body? I feel at home once I reach your respiratory tract. And the game of your life and death is in my spikes now. I tend to bind

to the angiotensin converting enzyme-2 (ACE2) receptors, organs considered more vulnerable due to ACE2 expression levels include the lungs, heart, oesophagus, kidneys, bladder, and ileum.

My spike glycoprotein receptor facilitates my entry into the host cells. Now, as I invade different cells of your body and start a production unit of others of my kind, I take over and weaken your system by attacking more and more target cells. Within 5-6 days on an average (2-14 days incubation period/pre-symptomatic period) of my entry, you start reacting and show symptoms, which alerts you and worries me. But hold I can transmit infection to your fellows in my pre symptomatic period also, so I am here to stay with you, I can infect many of you even if you have not detected me. My load i.e. viral load reaches its peak at the time of symptoms. The symptoms vary amongst individuals. It all depends on their immunity and the virulence of my attack. The clinical presentation resembles viral pneumonia and the severity of illness ranges from mild to severe. The most common symptoms are: Fever (83%-99%), Cough (59%-82%), Dyspnoea (31%-40%), Myalgia (11%-35%), Fatigue (44%-70%).

Less common symptoms include: Anorexia (40%-84%), Sputum production (28%-33%), Sore throat, Confusion, Dizziness Headache, Rhinorrhoea, Chest pain, Haemoptysis, Diarrhoea, Nausea/vomiting, Abdominal pain, Loss of smell/taste, Conjunctival congestion. Children may have gastrointestinal symptoms. I may seem to be a tiny virus for a man, but am a major threat to mankind.

But what made my community transmission possible in such a short pan. The countries are debating and are hesitant to declare me as causing community transmission. All the symptomatics that you actually see are just tip of the iceberg. I am destined to be on earth till my stage IV, i.e. till I cause immunity in you and your herd reaching herd immunity, through infection or vaccination.

## Host

Nobody can escape my wrath. I am not biased in my actions and I hit anyone who comes in my way as long as I get a susceptible host, I need to survive as you do after all. Unlike humans, I treat everybody equally. Royalty even runs in my blood. I have infected renowned figures like wife of Canadian Prime Minister, British Health Minister to name a few. Now after giving an insight into my life let me take you to a ride on how much you have lost after my victory. Some say that 65% of my victims are males. However, the severity of the disease, as well the mortality is determined by immune responses of my host. Elderly having co-morbid conditions are seen to having higher mortality because of compromised immune system. Pregnant women take care. Hey, if you want to get rid of me boost up your immune system, I might leave you infected without much trouble. Though the young patients are infected, they usually show mild or no symptoms. In 81% of cases symptoms are mild, in 14% cases symptoms are moderate and 5% cases are seen having severe symptoms like Acute Respiratory Distress Syndrome (ARDS) and overall mortality caused in you is around 2.5%-3.2%. Majority of the mortality is seen in those above 60 years of age with highest above 80 years (14% in Italy vs. 10% in Wuhan) [4]. So, age composition of a country will determine mortality. A country like Italy where 22% of population are elderly (more than 65 years) the mortality is very high [5]. Whereas, in India 6.4% are above 65, so naturally the mortality will be less there. Talking about secondary

attack rate in household contacts, I can attack 3% to 10% of them. This again depends on your immunity, my dear.

So, what is immunity? Humans have two types of immunity. The first line is innate immunity and second is adaptive immunity. Innate immunity does not have a memory and it is mediated by N K cells, macrophages and neutrophils. The adaptive immunity is mediated by T and B lymphocytes and it needs a memory of a previous encounter with the pathogen. So, get infected and boost your immunity, if you can afford. If you are from countries where malaria and tuberculosis is prevalent, I can modulate your innate immunity if you have had BCG vaccine or taken chloroquine, but this speculation of yours is called ecological fallacy and is not explained like this dear. Shredding of the COVID-19 virus is highest in the early course of the disease- i.e. within the first 3 days from onset of symptoms. I can cause illness to others for potential 14 days before to after 14 days of symptom onset; roughly till you develop antibodies. I can be infective to people even when my host does not show symptoms. In Diamond Princess ship there were no preventive precautions taken, I caused disease in 18%. The Centers for Disease Control and Prevention (In USA) estimated asymptomatic transmission can be as high as 25%.

Talking of my communicable period; aggressive tracing by a team from Wuhan, China, created models based on data from two different studies of patients with COVID-19. The researchers found the highest viral loads on throat swabs collected at symptom onset; the loads rapidly declined during the next 7 days. They estimate that 44% of secondary cases were infected in the 2 days prior to onset of symptoms, at least among transmissions that occurred among people in close contact (e.g., households). The researchers conclude, that COVID-19 is highly infectious in the 2 days before symptom onset, is based on modelling. No samples were obtained in patients prior to onset of symptoms. Nevertheless, these findings are consistent with anecdotal evidence of relatively frequent spread by asymptomatic carriers. If this hypothesis is correct, quarantining will be less effective in controlling me than it was with SARS.

## ENVIRONMENT

It is a hot topic for a while now; that whether the hot climate will be able to kill me? Still unsure. But let's see the temperature and latitude of the affected countries! 'The Global Virus Network' has predicted that weather modelling can explain spread of COVID 19. Their observation is that the spread is along a narrow corridor of 30-50 °N at consistently similar weather conditions of 3°-17° Celsius and 51%-79% humidity. They also suggested that a temperature rise of 12° Celsius or higher may make my transmission difficult. A study in China also found that my transmission is best at a temperature 8.72° Celsius and with every 1 degree rise in minimum temperature, the total numbers of cases go down. So, what will be my fate in boiling temperature is a valid speculation. Air pollution is likely to be a major risk factor for the lethality of Covid-19, scientists from Italy had concluded in a paper [5] that probed whether atmospheric pollution can be considered a co-factor in the extremely high level of SARS-CoV-2, which causes Covid-19 lethality in Northern Italy. People with underlying respiratory conditions are more vulnerable to Covid-19 and people in areas with higher air pollution areas are more likely to be affected. In slum dwellers I can flourish due to some conducive factors viz; overcrowding, lack of sanitation, toilet and water facilities.

## SOCIOECONOMIC

Money plays a major role to sustain life for humans. I have taken a toll on the World Bank and economies of superpowers and all the affected nations globally. The most affected stratum being the poor, the migrants, slum dwellers, refugee camps. My apologies but that is what I am destined to do in my span of ruling.

## POLITICAL FACTORS

It is a tendency of every being on earth to suppress what tries to dominate. So, what steps have nations and your governments taken to combat and nullify my impact? Major portion of the globe is observing a lockdown right now which means restriction of movement of people and goods to and fro. The world's largest lockdown means all factories, markets, shops, places of worship are now closed, most public transport suspended and construction work halted and people practicing social distancing. It will be financially devastating for many Health systems.

The torchbearers; healthcare workers, police, army forces and media are emerging as modern heroes of the nations. They are involved in Surveillance viz; screening, tracing, testing isolating, treating, quarantine and others [6]. Hey; "Lock out your fears and ease off the lockdown".

## OUR EXISTENCE IN NATURE

To illustrate my point; I want you to close your eyes and picture mother 'Earth' as a human body and you will see that the earth breathes. It evolves, some of its parts die sometimes, and others appear. And just like a human body it has to stay in good shape! So, when something goes against its own system, as it is the case with all the pollution and the destruction, it has to fight back. Just like when you get sick because of bacteria or virus like me, your body fights against us back. Well, nature fights as well the way it can. It's the way things are: in order to survive, the smallest has to adapt to the biggest. So, one needs to adapt to nature, and the same has to adapt to the planets' movements as well. The season change because of the Sun, the tides happen because of the Moon, etc. Nature is impacted just like us by the planets.

### How should I behave?

Modern problems need modern solutions, isn't it? But every coin has two sides. Even I am creation of nature like all of us. Will I be remembered only as a villain? I am a blessing in disguise for those who look at me as an opportunity rather than a calamity. Let me show you the greener side too. Humans are social animals, woven together by the thread of community, what affects one shall affect mankind, eventually. You have several chances of becoming my victim, all are affected equally. So, why not fight against me with equal strength, in oneness, united. It is said that divided you will fall, united you stand, win. Why not learn from my family? Together, as coronavirus family we are challenging your limits, can't you all together fight against us? Or be a part of ecological chain. As globalization is taking over, people are getting enslaved to technology, neglecting the knowledge of your ancestors, in the process neglecting your health and competing for scarce resources. You only realize the importance of water when the well runs dry. Because we are mortal beings inhabiting the earth. I can see people contemplating, reflecting upon their actions and giving a thought about what they have done and what is yet to be done, which they

hadn't done in a while. I can see families coming closer, reviving and growing together, strengthening the bonds. I can see mother nature repair itself from the damage mankind has done to her. Remember you are not the only ones inhabiting the planet. When you try to take and conquer what you are not supposed to, the nature will do what it is supposed to, no matter how great you think you are. A virus can bring your world to a standstill. We are sick because our home is sick. I can see Delhi the capital of India, which is considered to be one of the most polluted cities, is waking up to a clearer and clearer air with its AQI recording 109, the cleanest in 5 years. The ozone layer is replenishing as the world is taking a bow at India and its strategies, main cities are recording much lower levels of harmful microscopic particulate matter (PM) and of nitrogen dioxide, which is released by vehicles and power plants. The sudden fall in pollutants and the subsequent blue skies signal a dramatic shift for India and other countries. It is a silver lining in terms of awful crisis that you can step outside and breathe, since the lockdown began.

As per Charles Darwin's theory of survival, only the fittest shall survive. It implies to me as well. After such a close association with human, I can say that you are smart, but it's time to become smarter too. I will keep reading about you, so as to become resistant to your vaccines and medications, because even I am here to survive. So, is it an end, or a new beginning? Will I ever go? As such I am not very dangerous as you are speculating, but I want to have as many hosts as possible. Once I get established in you, I will not spread. I will decide to kill some very few of you, especially the elderly and the vulnerable and in majority (say 95%) I shall develop immunity, and that's the way out of me, only time will tell. I have the fear that the bat, my host is going to be eliminated. Therefore, I tried to change my host. I am warning you not to disturb my habitat. Do not cut trees, to construct luxurious apartments for you. My host, the bats live in trees and survive on fruits and if bats are eliminated my survival is at risk. The consequences can be deadlier than what you can imagine. When you abuse nature, you shall have to pay for it. If you want to correct the wrongs done, it is better to correct them now. Till then stay indoors because I am right at your door waiting to get inside.

### How should you behave?

In short run do not hide from me. Hiding from an invincible enemy is not effective as I will be waiting when you must leave hiding. Widespread unfocussed lockdown is economically and socially very damaging and unsustainable. Countries have bought time amid lockdown and made enough preparation against me to face challenges in order to promote safe and effective health care for you. Some of the challenges I posed were; access to quick and timely testing; here I want to address some concerns of the people, say Indians; a thickly populated country where it is impossible to test all as there is a cost involved, it takes time to detect me by a test as you call a RT-PCR [7]. The test can detect 40% -70% of my clans only. It also depends at what stage I am tested for, the skill of the collector of swabs, my vehicle to transport (VTM); all matter so it's okay if only symptomatic and high-risk contacts are tested. I heard Personal protective Equipment etc are being made manufactured, capacity of emergency departments is enhanced and protocols are in place, intensive care beds are increased, health work force is trained and there is a trend of telemedicine. But I still warn, all this preparedness is not enough, people need to follow all advices

related to infection prevention and control [8]. One very important challenge is that the emotional/mental health burden will be significant, perhaps resulting in more vacation time and perhaps greater need for mental health professionals to care for frontline health care providers. The high levels of pre-existent burnout present before the pandemic will grow. The clinicians will find a collective voice in demanding that their well-being be adequately addressed. Improved alignment between administrators, Hospitals and Community is the need of the hour. There is need of efficient leaders who should encourage more dependency on local resources.

## DO THE FOLLOWING; FIGHTING WITH ME IS NO ROCKET SCIENCE.

### Exposure to sunlight

Expose yourself to direct sunshine as sunlight may directly cut virus particle in 2 minutes (Vitamin D promotes the response of WBC, prevents release of too many inflammatory cytokines).

### Boost your Immunity

Stock up on nuts such as almonds and walnuts as they have a long shelf life and are good, healthy snack. For those who have decided to turn vegetarian during this period, lentils and chickpeas are essential source of protein and must be included in daily diet. Avoid eating uncooked food at these times. Opt for fruits and vegetables containing Vitamin A, C and E. These are high in antioxidants. Choose diet consisting of 4/5<sup>th</sup> of alkaline forming foods such as juice fruits, tubers, legumes, ripe fruits, leafy and root vegetables and 1/5<sup>th</sup> of acid forming foods containing concentrated proteins and starches. This would maintain the alkalinity of 80% and pH of blood around 7.4 that is slightly alkaline (neutral is 7) [9].

Remember to follow specific Measures as advocated during lockdown and post lockdown continue viz;

### General preventive measures

Hand hygiene, Cutting nails, Cough etiquettes, Environmental sanitation, Use of Personal Protective Equipment (masks, PPE), Social distancing [10], Develop self-awareness (at all levels-physical, mental, emotional and spiritual), Develop a habit of self-observance as objective self-observance develops healthy qualities, Daily meditation calms the mind and improves concentration and creativity ,Affirmation and prayer help remove negative thoughts and develop positive thinking.

Do not spit here and there and leave all addictions.

## CONCLUSION

Let the R0 come below 1, let vaccines against me come up which is not that easy as I told you earlier that I can mutate so shall require efficacious vaccines. Around 70% population shall need vaccine against me to develop herd immunity. It should be available globally. Some medicines are also tried to destroy me like, Hydroxychloroquine, Remdesivir, Lopinavir with Ritonavir, Interferon Beta 1a, you hope that they are available soon.

It is said that there is light at the end of the tunnel so I shall flatten your curve, shall not disappear but will become endemic and by that time I must have infected 30%-50% or more of mankind in a year, to become your normal host, so next year when I appear you will not talk of me or take me seriously. I will be one of the

viruses that you shall be hosting. I am uncanny, locking you down for a long time is not the solution, but it is necessary protect the vulnerable. Recovery in many countries is said to be around 40%. Take me seriously, take care of the nature around you, boost up your pandemic response capacity, make pandemic response a part of your national security. I can again come up as another new virus say H5 N1 avian influenza virus.

### Take home messages

1. Zoonotic diseases is going to happen if we try to disturb the habitat of animals like de-forestation, entering territories of animals and others
2. The introspection "forced" by nature, is a unique occasion to be in harmony with nature
3. If we want a better life, we have to treat nature better
4. Take care of the nature around you, boost up your pandemic response capacity, make pandemic response a part of your national security
5. It shall need an integration of various approaches, pharmacological and non-pharmacological to alter the impact of diseases through boosting immunity
6. Living through the crisis will be tricky for some people, we need to quickly find what suits us best and how we can make this work with people around us
7. A lot of community participation (more of a community level fight) at community level mostly related to health promotion and specific protection (life style modification and adaptation) is needed so that, patients coming to the hospital are reduced, so that hospitals are not strained

## DISCLOSURE

### Competing interests

We the authors declare that, have no any competing interests

## ACKNOWLEDGEMENTS

I render my sincere thanks to my "Almighty" to give me all the strength and courage to understand the "MOTHER NATURE" during times when we are all healing together.

## REFERENCES

1. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>.
2. <https://www.covid19india.org>
3. [https://en.wikipedia.org/wiki/Severe\\_acute\\_respiratory\\_syndrome\\_coronavirus\\_2#Phylogenetics\\_and\\_taxonomy](https://en.wikipedia.org/wiki/Severe_acute_respiratory_syndrome_coronavirus_2#Phylogenetics_and_taxonomy)
4. <http://www.cebm.net/covid-19/global-covid-19-case-fatality-rates/>
5. Fattorini D, Regoli F. Role of the chronic air pollution levels in the Covid-19 outbreak risk in Italy. *Environ Pollut*. 2020;264:114732.
6. Updated Containment Plan for Large Outbreaks of COVID-19. Guidelines; Ministry of Health and Family Welfare, Government of India.
7. COVID-19 Testing Strategy for India. Guidelines; Ministry of Health and Family Welfare, Government of India.
8. Infection Control practices for Covid-19. Guidelines; Ministry of Health and Family Welfare, Government of India.

9. Misra S. Integrative approach amid COVID-19 crisis-a perspective. *J Vaccines Vaccin.* 2020;11(3):1-7.
10. Wilder-Smith A, Freedman DO. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *J Travel Med.* 2020;27(2):taaa020.