



Case Report on Worldwide Deaths Cases of Covid 19 from December to Mid-May 2020 and Its Impact

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Abstract: The epidemic spate time has made to freeze the entire world of pandemic outbreak (Covid -19) Coronavirus disease 2019 which needs a crisis alert. WHO declared the Covid-19 of novel coronavirus as a public emergency and a pandemic outbreak? WHO report says, that in the end of mid-May, 2020 about 4,526,850 cases, 303,405 deaths (15%), 1,704,268 recovered (85%) were reported and about 81,997 total cases and 2,649 deaths have been reported in India. Moreover, the result of the outbreak has locked down many countries including China, USA, Italy, Spain, France, Germany, Japan and Vietnam. Within 23 weeks of its spread, it has affected almost 215 countries across the world. India is in the 12th most affected economy due to Global and domestic recession. The positive impact of the lockdown is on the healing of the environment pollution proved by its Air Quality index (AQI). On analysis of total affected cases and the total deaths from January to mid-May, 2020 and on comparison about 1.4% death cases are increased. The Crude Death Rate in the month of January- mid May, 2020 was 21.6, 35.1, 51.06, 70.8 and 67.02 per 1000 individuals of given time period. WHO has recommended the drugs on physician advice such as the hydroxychloroquine with the antibiotic azithromycin and antiviral drugs were acyclovir, ribavirin, ganciclovir and methylprednisolone for the Covid -19 for clinical practice. This review has briefed about coronavirus structure with virulence infection and case report on crude death rate and its impact on world economy as well as the environment.

Keywords: Air Quality index (AQI), pandemic outbreak, recession, azithromycin, antiviral drugs, and methylprednisolone.

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I. INTRODUCTION

I.1 HISTORY OF PANDEMIC

A choke in the chest yet to cure the same as in the minds of mankind are struck across the world about the pandemic outbreak of the novel coronavirus Covid-19. Every day from outbreak start in Wuhan city, of Hubei province till now of past 4 and half months which may prolong its hit in the minds of a doctor, a scientist, a military man and to the layman were about survival of fittest and are very much scared about the deadly Pandemic of 2020 is about SARS COVID-19¹. Nature with its Mysterious history and its superpower every 100 years works on the Pandemic outbreak which has been proved in 1720's plague, 1820's cholera outbreak, 1920's Spanish flu and 2020 is now the Covid-19. In 1720, the great Bubonic outbreak by *Yersinia pestis* transmitted through the flees in Marshall city of France where lakhs of people died was recorded. In 1820, the water borne disease cholera (*Vibrio cholera*) outbreak in Asia continent also sucked the lives of millions of people whereas its spread is controlled by the Vaccine and general Hygiene. In 1920, a deadly outbreak by a HINI influenza virus ruined 500 billion people and 100 billion people died originated in Spain named after this called Spanish Flu. Now in 2020, the Coronavirus disease (COVID 19) is infectious and causes severe acute respiratory disease caused by the newly discovered Coronavirus.

I.2 CORONAVIRUS – DEADLY OUTBREAK AND ITS PROBABLE ORIGIN

Coronavirus belongs to the large SARS family. It spreads within the people through the infected droplets of saliva, discharge from the nose, on coughs or on sneezing. The people affected may cause severe respiratory infection with severe cough, fatigue, diarrhea, throat pain ultimately results in the severe breathing illness problems with mild to high fever. There are no reports of infected people with no symptoms. The reproductive numbers (R_0) were found to be increased about 2.2 when compared to SARS². The infection spreads from Human to human and no such reports of animal transmission whereas it may be a carrier or so. This mainly targets people with low immune responses like older adults and the middle age adults. They can also become a carrier when not shown the symptoms may spread the potency virus and get transmitted to the immunosuppressant individuals. The complication in people who developed the Covid-19 have ARDS acute respiratory distress syndrome, Irregular heartbeat, Cardiovascular shock³, fatigue, Severe muscle pain, Heart damage (myocardial injury) with pain, multiple organ failure and finally death. This was found to be severe for the older people and with other diseased people with low immune system⁴. Additionally, there are cases with children of 100 in numbers even being a few infected from 30hrs of birth with weak immunity. Clinical investigation of a study reveals that fever and Cough were about 65-90% in

common whereas sore throat and Headache symptoms were found to be least below 14% of infections of Covid-19⁵. The symptoms were similar to SARS-CoV and MERS-CoV infections⁶ which affected in the year 2003 in Mainland China and 2013 in Saudi Arabia regions respectively.

I.3 CITY OF OUTBREAK - BACKGROUND

As earlier mentioned, the Wuhan city of China is the first place of this Coronavirus outbreak in the month of December 2020. The first lady to get infected as per reports is a seller of prawns in the Wuhan illegal market called zero infected person. It was on 12th January, 2020 the WHO announces that Coronavirus has named as 2019-new coronavirus 2019 - (nCov) with which the disease of Covid - 19 affects. Many WHO reports says the virus transmitted from the wildlife animals like civet cats, bats, snakes, pangolins where they were being sold in the illegal market in Wuhan and also from Huanan Seafood Wholesale Market. As on 4th March 2020, including 2873 deaths a total of 79,968 cases of COVID-19 have been confirmed in mainland China⁷. Being the largest city of Central China about over 11 million people after the outbreak was locked down. They shut all the train stations, all the markets, public malls and even getting praised by the WHO for the cutting off the city "an unprecedented in public health history" even had its worst impact on the other countries like USA, Italy, Spain, France, Germany, Japan and Vietnam who were swerving or unswervingly affected. With efficient handling of the virus, the Chinese government controlled the virus spread and ended the lockdown on April 8th, 2020⁸ inspite of the total cases were 81,865 with registered death cases were recorded as 3,335. This is real dare restart of the economy to compensate the halt during the coronavirus outbreak. Being the world workshop the Factories, retail sales and investment again renewed nationwide against the tumbled state. The analysts say that this is to overcome the first shrunk since 1976. They actively and orderly work hard to minimize the losses caused by the epidemic, and regain normal economic and social development of the province as soon as⁸.

I.4 STRUCTURE AND MECHANISM OF VIRULENCE

Coronaviruses belong to the *Coronaviridae* family with four genera of classification α , β , γ and δ coronavirus based on its infection to the different host like Mammalian, Avian etc.⁹. They have a large family, enveloped (+) strand genomic RNA viruses. The genomic RNA is 27-32 kb size which is surrounded by Nucleocapsid protein in turn enveloped with the three structural proteins. The membrane protein and the envelope protein are involved in the virus assembly which has spike protein on the envelope as shown in the Figure 1.

Structure of Coronavirus

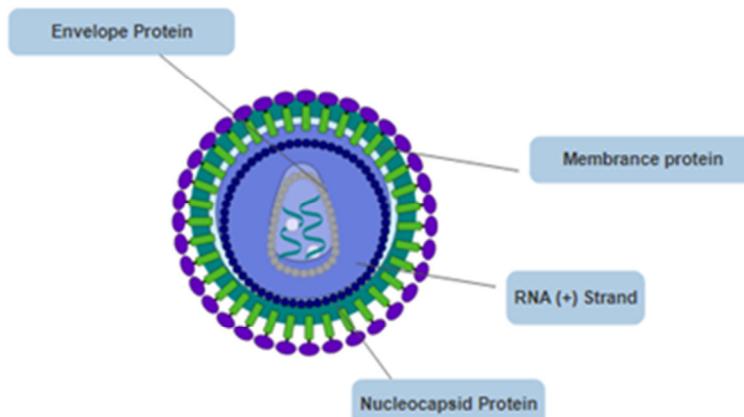
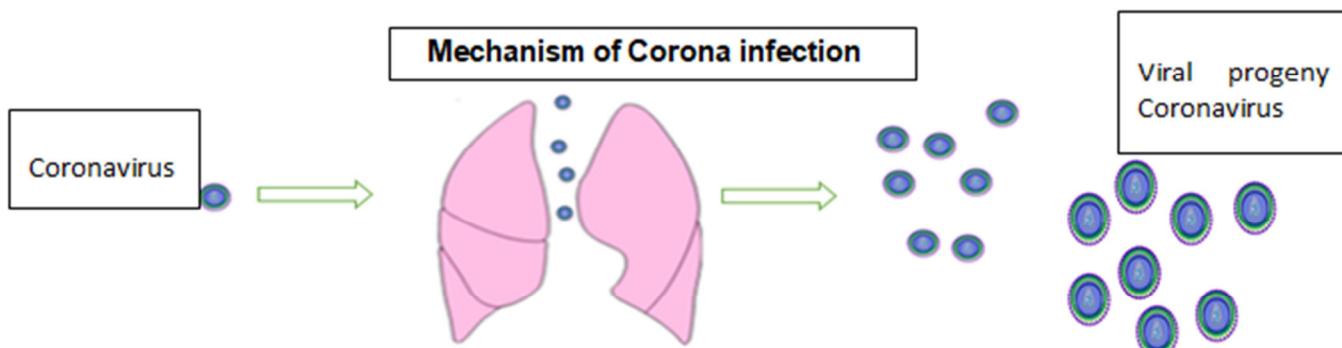


Fig 1: Structure of Coronavirus

The viral particles when inhaled via droplets through Nasal or through the mouth, it enters the respiratory system and enters into the cell using the spike on its surface. The SARS CoV-2 and nCoV have similar cellular receptor entry as by the studies of Zhou et al., 2020¹. The incubation period of nCoV was between 1-14 days with latency period found to be more contiguous¹⁰. The pathogen virus's receptor spikes are recognized by the Host cell surface. The specific interaction between the receptor and the viral protein allow it to enter the cell. The Genomic RNA (+) Strand with coated enters into the cell organelles to undergo transcription process. The various mRNAs are formed with various segment sizes. The RNA (+) strand can also replicate itself to form RNA (-) strand also. The RNA (-) strand enters into discontinuous transcription. All the subgenomic size

varied mRNA molecules enter into translation process where different sized proteins mainly polyproteins pp1a and pp1ab are synthesized called Viral proteins¹¹. The Rough Endoplasmic reticulum, cell organelle which are involved in the protein synthesis here involved in the viral protein as depicted in the flow diagram below. They then release the viral progeny through the vesicle in the process called Exocytosis thereby coming out from the cell¹¹. It takes the lung tissues as its productive machinery and synthesis through the above mentioned process. Meanwhile it makes it hard to breathe with increase in the mucous liquids which hardens and blocks the bronchioles¹² as shown in the figure 2.

Mechanism of Corona infection



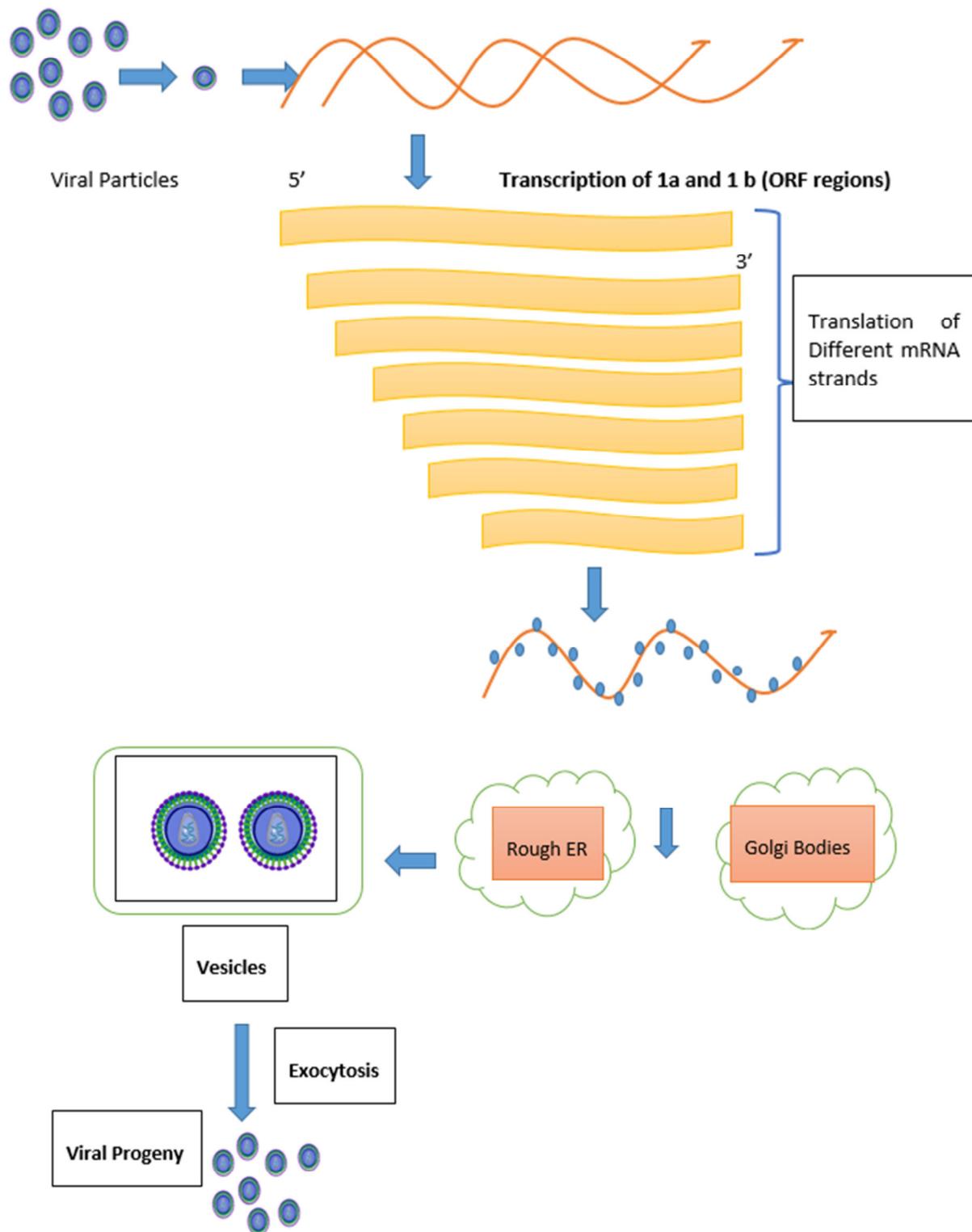


Fig 2 Mechanism of Coronavirus infection; its Virulence.

1.5 TESTING AND RESEARCH ON CORONA (+) CASES

In Hubei (provincial) CDC and then at the National Institute for Viral Disease Control at China CDC, the laboratory assays are done with the collected samples collected from the upper and lower respiratory chest samples where RNAs were extracted and subjected to RT PCR with the primers and probes. If the nucleocapsid and the open reading frame 1a, 1b were found to be present then the case is confirmed with the (+) positive assays in the biosafety laboratory 3 based on the sequencing method like Sanger sequencing, illumina sequencing and nanopore sequencing. As similar to

the severe respiratory syndrome and middle east respiratory syndrome the reports of Zhou et al., 2020¹ explains that the viral shedding examined on the clinical trials found to have about 8-37 days, till the viral progeny were found to be detected until the death of the survivor. The biosafety laboratory III is used to carry out the research when to recover the viral isolations by administering the respiratory specimens into the cells at the National Institute for Viral Disease Control and Prevention, China CDC, in Beijing¹³. The recovered patient who found to have (-) negative for the Covid- 19, later found (+) positive with asymptomatic carriers with no fever or dry cough. Dr. Li Wenliang, Chinese physician was the first to report cases on Covid-19

who was warned by the Chinese community party government and named him as whistleblower and he was also found (-) ve for coronavirus later he died ¹⁴. The infections were as similar and common to flu while the impact of transmission will be drastically increased to one to one contact or the community basis which in turn needs more hospital beds, ventilators and also many protective equipment to treat the Covid –19 which on shortage may be a frightening scenario.

1.6 GENOMIC ANALYSIS OF NCOV

The genomic analysis of similarity of nCov and SARS CoV was found to share 79.5%. From the study of Zhou *et al.*, 2020¹ the viral genome similarity and the evolutionary aspect of research confirms that bats were the origin of the SARS-CoV virus which humans become an Intermediate transmission. The proteins sequence and receptor alignment sequences gives the results of more possibilities of other animals such as pangolin, civets, cats and turtles whereas shares the similarity of bats ¹⁵. The genome of SARS CoV shares about 96.2% with the genome of Bats CoV RatTG₃ having the same ancestors. The transmission of SARS-CoV can be via infected animal to animal, animal to human, human to human or direct contact with the intermediate host animal and consuming it. The MERS-CoV and SARS cases of healthcare works with about maximum transmission of 79% and 42% respectively ¹⁶.

1.7 INFECTION AND ITS IMPACT ON PANDEMIC OUTBREAK

Due to the alarming impact on the Human health and its severity the Director general Dr. Tedros adhanom of WHO announced Covid-19 to be a pandemic and also declared on January 30th as Global Public Health Emergency which was too late as it almost reached its spread of more than 10,000 people. Within 23 weeks of its spread, it has affected almost

215 countries across the world, In the end of mid-May, 2020 about 4,526,850 cases, 303,405 deaths (15%), 1,704,268 recovered (85%) were reported and about 81,997 total cases and 2,649 deaths have been reported in India¹⁷.

1.7 IMPACT OF THE TEMPERATURE ON THE TOTAL DEATHS

Temperature is not a strict constraint for the spread of the coronavirus as per the reports of experts like Dr. Kishore Singh, a medical superintendent of LNJP hospital of Delhi government said. He also added that the coronavirus cannot reproduce in the warm temperature but its lifespan can increase in the cold temperature. Similarly SARS virus viability has been proved to get lost at higher temperature at 38 °C also its virulence reduces in the tropical countries¹⁸. Deviation from the temperature dependency may be due to the contaminated surface in the localities where people interact and also with the fomites increases the transmission of virus. The virus stability may prolong for about 3 weeks at room temperature in a fomite with liquid conditions and can be easily killed at 56 °C for 15 minutes ¹⁹. On analysis of the Table I below when the temperature increased with limitations of other transmissions the total affected cases and the total death were greatly reduced. When the temperature is about 30 °C with summer season there are no deaths cases remarkably reported. In contrast the countries which were in the winter season between 4-17 °C found to have a more likely environment for the virus propagation, multiplication and the spread as mentioned Table II. Sunlight will cut the virulence ability of the virus reported by Nicholld, Virologist. Also the temperature weather warms up the virus may still survive for the period of time based on the community closeness of the infected people and various other reasons. A higher temperature between 30-40 °C reduced the viral persistence and at 4 °C increased the persistence till 28 days ²⁰.

Table I: Countries having summer seasons with Total cases and Total Deaths at the end of March, 2020. (Data from WHO, 2020¹⁷)

No of Countries	Total cases affected (Nos)	Total Deaths	Temperature °C
South Africa	1187	1	21.6
Egypt	536	30	21.9
Qatar	590	1	30.0
Sudan	5	1	29.0
Nigeria	97	3	27.0
Cuba	119	3	27.5
Dominican republic	719	28	29.3
Sri Lanka	113	1	33.0
New Zealand	514	1	25.0
Zimbabwe	7	0	21.0
India	933	20	29.0

Table II : Countries having winter seasons with Total cases and Total Deaths at the end of March, 2020. (Data from WHO, 2020¹⁷)

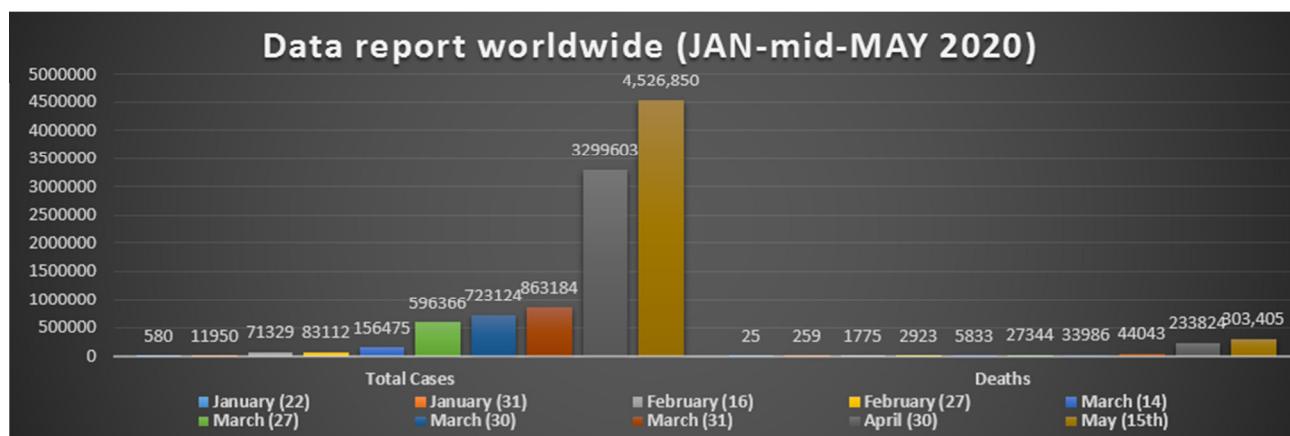
No of Countries	Total cases affected (Nos)	Total Deaths (Nos)	Temperature °C
Italy	92472	10023	8
China	81439	3300	17
Spain	73235	5982	6
France	37575	2517	5
USA	123750	2227	11
UK	17089	1019	4
Netherlands	9762	639	6

Germany	57695	433	4
Belgium	9134	353	4
Switzerland	14075	264	8
South Korea	9583	152	16

1.8 TOTAL AFFECTED CASE AND CRUDE DEATH RATE ANALYSIS FROM JANUARY TO MID-MAY ACROSS THE WORLD

According to the WHO report, the total cases affected from January, 2020 was initially 580 which increased to 4,526,850

cases in the mid-March, in an increase of 7804 times as shown in the Graph 1. Similarly the Crude death rate Death rate was also increased from January to mid-May, 2020, 21.6 death units to 67.02 death units which is a tremendous uncontrollable increase which also proves its spread is enormous in number worldwide.



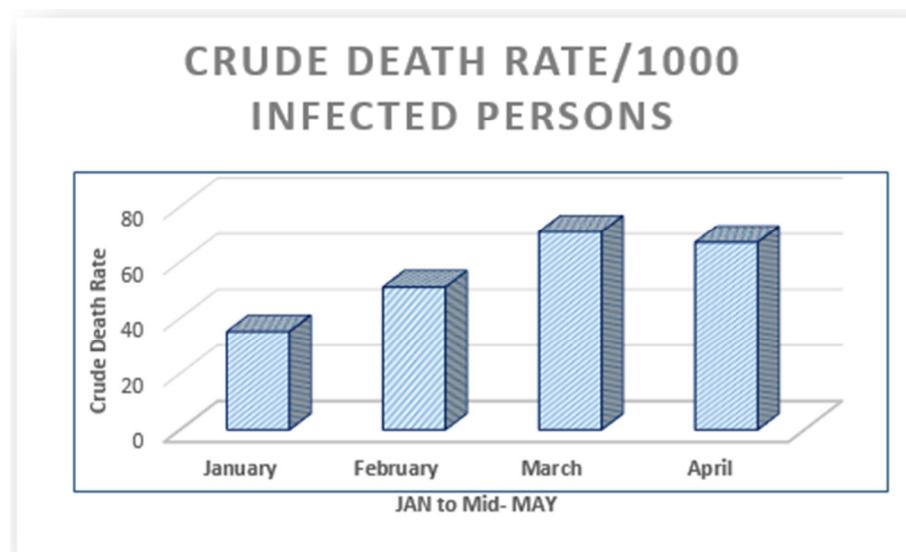
Graph 1: Total affected case and Mortality analysis from January to mid-May across the world¹⁷

On analysis of the obtained data of total affected cases and the total deaths from January to mid-May, 2020, on comparison of total affected cases about 1.4% death cases are increased. Analogous to which fold of increase of infection from January to mid-May, 2020 were from 2.17 % to 6.7% whereas the maximum Total infection were calculated with the death of about 7.08% increase in the month of April, 2020.

1.9 CRUDE DEATH RATE

The Crude Death rate was estimated from the data released by WHO²⁰; the death increases between February and January, 2020 was about 6.85 units and Crude death rate was

about 35.16 death units per 1000 persons per time period. Between March to February month, 2020 the death was increased 15.06 units with 51.02 crude death rate per 1000 persons per time period. Similar pattern of increase drastically seen in the next month from April to March were 70.86 death units per 1000 persons per time period with 5.30 units. In the mid of May as of 15th may, 2020, crude death rate reached 67.02 death units increase to be noted that it may have a heavy impact on the forthcoming months. By following the social distancing, quarantining the infected, suspected people, taking necessary medication and preventive measures then this can be controlled to some extent whereas it is unpredictable as depicted in the Graph 2.



Graph 2: Crude Death Rate

Note: Crude Death Rate evaluated by $d/p \times 1000$ where d = Number of Deaths, p = Population targeted for 1000 per individual for the data obtained from WHO, 202¹⁷

I.10 IMPACT OF LOCKDOWN ON WORLD & INDIAN ECONOMY

As Dun & Bradstreet's latest Economy Forecast, the countries across the world are under recession and have a greatest impact on the Global and domestic growth of all the nations. Also the global price of the Crude Oil, Base metals, Fertilizers found a downward decrease. India will be the 10th most impacted economy due to its disruption in the supply chain from mainly China with Chemicals, Textiles, Apparels, Automobile industries, medicinal and Pharma industries. . Many Airways, waterways and roadways travel restriction has a great revenue loss due to the suspension of flight to various hotspot countries for Covid-19. Its impact is also seen in the rise in the pharma drugs about 30-40%. Especially the country like Kenya with \$8 million revenue loss according to Pauline, a reporter, from Al Jazeera ²¹. Usage of Coal: Due to the lockdown the coal usage in China has been reduced to about 36% compared to last year. Similarly, it will also have a reduced impact in all the countries of lockdown. Every sector have stumble upon this crisis with 3 consecutive lockdowns in India. The country had encountered its 3rd third lockdown of effects with job losses, stretched balance sheets, lower capex and weak consumer demand. Whereas now almost already wiped off Rs 52 lakh crore worth of equity investor wealth, with Sensex and nifty languishing at multi-year lows after falling 35 per cent from their January peaks ²². India has a promising future, the United States has officially dropped China and has planned to invest in India due to the politics issues, for the start of new industries thereby we have a change of 20 lakhs crores. Almost 5 countries US, Japan, UAE, Germany and France has a good partnership in manufacturing and marketing with India. This may overcome from the economy crisis in future which may take more time to go²³.

I.11 PSYCHOLOGICAL STRESS ASPECTS OF LOCKDOWNS

The pattern of life has changed suddenly and is said to be an unexpected stumble in the minds of millions of people may have a greater impact on the psychological conditions of the individuals which contributes one third of the world's population. The statistics says that about 1380 millions of people in India are under enforced lockdown found to be higher compared to the 760 millions in China, The country which reached its height of outbreak. The wide range of symptoms of psychological stress and disorder, including anger, irritability, emotional exhaustion, low mood, insomnia, stress, anxiety, depression and post-traumatic stress symptoms. In all the symptoms, Low mood and irritability specifically stand out as being very common²⁴.

I.12 NO₂ EMISSIONS IMPACT ON THE ENVIRONMENT

The Quarantining and lockdowns have shut down the factories so that the emission of various gases such as Nitrogen dioxide as a major air pollutant has been reduced across the world nations. Especially countries like Italy have declined its GDP of about 24% and 10-20% in the other cities of the UK and its images have been seen from Centre for research Energy and Clean Air (CREA) and National center for Atmospheric Science. Similarly the European space agency has shown a significant decrease of 5-10% Co₂ emission as well as traffic level fell below 35%.According to

the center-run System of Air Quality and Weather Forecasting and Research (SAFAR), 30% drop in the fine Particulate pollutants by 30 percent in Delhi and 15% in Ahmedabad and Pune. Almost 39 cities of India found to be recorded as "Good" air quality and 51 cities with "Satisfactory" Air quality index (AQI) which corresponds to 0-50 and 51-100 AQI respectively. The River of Venice was found to be clear as devoid of the motorboats and the increase of fishes where the fish returned to the Venice lagoons and canals for the first time in decades. According to Andrea, Head of Italian environmental lobby has said that the impact of the lockdown has made a net positive result in the environment. Also about 8 lakhs of endangered Olive Ridley Turtles have returned to Odisha's shore for mass nesting. To add up also the swans, Dolphins returned to Italy due to air and water quality reported by Loveleen Kaur, Reporter, *The Hindu*²⁵.

I.13 PREVENTION STEPS

The Most choice of the pandemic outbreak control and to battle against it is by social distancing. It also depends on altering the trajectory of the outbreak how all the people are committed to physical distance ²⁶.The fomites in contact with Hands on touch with the Eyes, nose and mouth can transfer the virus into the body and make them sick. Respiratory hygiene is maintained by using the tissue on sneezing or coughing and also proper disposal of the used tissue to avoid droplet spread of Covid-19. Frequent washing of the hands with the soap or using alcohol sanitizers will act as a dissolver of the lipid layer of the Covid-19 virus membrane. By using the alcohol and frequent smoking can decrease the immunity. The natural remedies to improve the immune system as the Covid -19 hits mainly the low immune efficacy individuals. The Black seed can be taken with the warm water or steam inhalation with Black seed oil can be carried out. The salt water gargling can keep the infected throat protected. Hydration is a very important aspect to get the microbes/ viruses avoided. Zinc supplements and Vitamin C also help to boost the immunity.

I.14 RECOMMENDED MEDICATION BY WHO

At this time, there is no vaccine specific for this disease, many ongoing trials are going on in live SARS- CoV-2 infection. A remarkable research in Chinese Clinical Trial Registry, the International Clinical Trials Registry Platform (WHO ICTRP) and various sources have led to a decision of treatment. Gordan *et al.*, identified that about 66 human proteins targeted with the 69 existing FDA approved drugs with clinical trials ²⁷. The chloroquine phosphate has a marked efficiency with safety level and treats COVID -19 as clinical trials. Also the French researchers have proved with low cost expenditure the chloroquine acts against viral infections especially SARS²⁸ especially for low and high income countries while the side effects were noticeably very high when the dose taken was not directed by the Physician. Moreover, the chloroquine interferes the cell receptor by a process of glycosylation thereby intervening the infection of SARS CoV ²⁹. The side effects like organ failure and blindness may happen. The hydroxychloroquine with the antibiotic Azithromycin was as recommended as per the physician's advice. Antiviral drugs were also recommended for the Covid -19 in clinical practice were acyclovir, and ribavirin, ganciclovir and methylprednisolone. The Flavilavir, an antiviral drug has been approved by the Government of China with

the minimal side effects of clinical trials for about 70 patients for the treatment of Coronavirus. Many Pharmaceutical companies across the world are testing many drugs for treating Covid-19. Also retroviral drugs, steroids to reduce the lung swollen and blood plasma transfusion with plasma therapy can be carried out to battle against the Covid-19³⁰. The compounds such as valinomycin, glycopeptide antibiotics, plant lectins, hesperetin, glycyrrhizin, aurintricarboxylic acid, niclosamide, nelfinavir and calpain inhibitors are proved to be against the *in vitro* activity against SARS-CoV³¹. The plasma therapy is also given to many patient on trial and it's is working on. The plasma donation process takes more time than the blood donation and they are collected from the patient who recovered or from the asymptomatic conditions. The collected plasma transfused within works well on the covid-19 patients³².

2. CONCLUSION

The ultimate idea of presenting this review to get awareness of rapid spreading Covid-19 across the world at a High level.

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The nature of the virus, its similarity in the genome level with the other virus species, comparative study about SARS and MERS, the mortality rate were discussed based on the investigation and research by various scientists. Analysis of Covid-19 with the other diseases the way it spreads, the intermediate host, the population very much prone to infections with various medical conditions with more responsive care is needed. Also unidentified aspects of mechanism of its virulence of symptoms like ARDS acute respiratory distress syndrome, Irregular heartbeat, Cardiovascular shock, Fatigue, Severe muscle pain, Heart damage (myocardial injury) with pain, Multiple organ failure and finally death have to be explored which may rescue many lives and revolutionaries the history of medications looking in Future.

3. CONFLICT OF INTEREST

Conflict of interest declared none.

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