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COVID 19 PANDEMIC IN THE WORLD

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ABSTRACT:

There is a new worldwide health crisis impacting the public as a result of the spread of COVID-19 (Coronavirus Disease-2019). The highly contagious Coronavirus disease (COVID-19) was identified in December in Wuhan, China, and has since spread rapidly across the world, infecting millions of people in every nation and territory except Antarctica, according to the WHO. Who designated this virus as COVID-19? According to virologists, the SARS and MERS viruses are closely linked to the COVID-19 virus. SARS COV-2 is phylogenetically linked to other SARS-like bat viruses, and as a consequence, bats have been identified as a possible reservoir for SARS COV-2. Globally, the pandemic is wreaking havoc on billions of lives in several ways, including economically, socially, and adversely affecting people's lifestyles and mental health. COVID-19 has spread across the globe, and one of the main obstacles to its spread has been the inadequacy and unavailability of medical testing for both diagnosis and treatment. Now that the virus has spread across the world, it is gaining popularity. According to scientists, COVID-19 has emerged as the most lethal pandemic to strike the globe in the twenty-first century. India overtook the United States as the nation with the most confirmed COVID-19 cases in the world in February 2021, with about 10.8 million confirmed cases. As of February 11th, 2021, the World Health Organization estimates that there have been over 107,861,936 cases recorded worldwide, spanning 212 regions and counties, resulting in over 2,365,119 fatalities and 79,879,221 recoveries. As a consequence, the Indian Ministry of Health and Family Welfare, in cooperation with the Indian Council of Medical Research (ICMR), has produced guidelines and warnings about social distancing procedures, diagnosis and treatment, dos and don'ts, and other reliable information.

KEYWORDS: COVID,SARS-COV,MERS-COV, Pandemic

INTRODUCTION:

As the name suggests,'CO' stands for 'corona,' 'VI' stands for 'virus,' 'D' stands for 'disease,' and '19' stands for the disease outbreak year 2019. Ebola, Lassa fever, Crimean Congo hemorrhagic fever, SARS-CoV, Marburg virus, Rift Valley fever virus, MERS-CoV, Zika, Nipah Virus, and COVID-19 are only a handful of the viral outbreaks that have occurred recently. COVID-19 is an infectious illness transmitted by the corona virus 2, which normally causes extreme acute respiratory syndrome (SARS-COV2). **[1**]1st The term novel comes from the fact that animal mutations of the corona virus have never been seen before. Covid was first discovered on December 31, 2019 in Wuhan, Hubei, and has since spread across China, triggering a Pandemic. On November 17th, 2019, the first reported case of Covid-19 was discovered in Hubei. The virus multiplied so rapidly that 1000 people tested positive two weeks after the first cases were discovered. These patients had health signs such as fever, shortness of breath, dry cough, dyspnea, and bilateral lung infiltration on radiography. The cases have all linked to a wholesale marine market that trades in fish and sea food or a variety of live animals such as bats, marmots, chickens, and snakes, though this has not been confirmed. COVID-19 was proclaimed a public health epidemic of international importance (PHEIC) on January 30, 2020, and a pandemic on March 1, 2020, by the World Health Organization. [**2,3**]

VIRUS STRUCTURE:

The Human corona virus (CoV2) are enfolded virus with a definite sense of a single stranded RNA genome size and Coronavirus range of approx 26 to 32kilobases,this is one of the world largest identify RNA virus in this time.Coronavirus consist of the subfamily of ***Orthocoronavirinae*** and the family of ***Coronaviridea***, *it comes under the* order ***Nidovirales,*** and kingdom ***Riboviria***.**[4]** However "Coronavirus" name originated from the latin word 'corona, which means "crown".**[5]**The Coronavirus name was given by David Tyrrell and June Almeida.In the beginning the word is used in1968 by a group of spontaneous virologist which considered the novel family of virus virions in journal nature**.[6]**

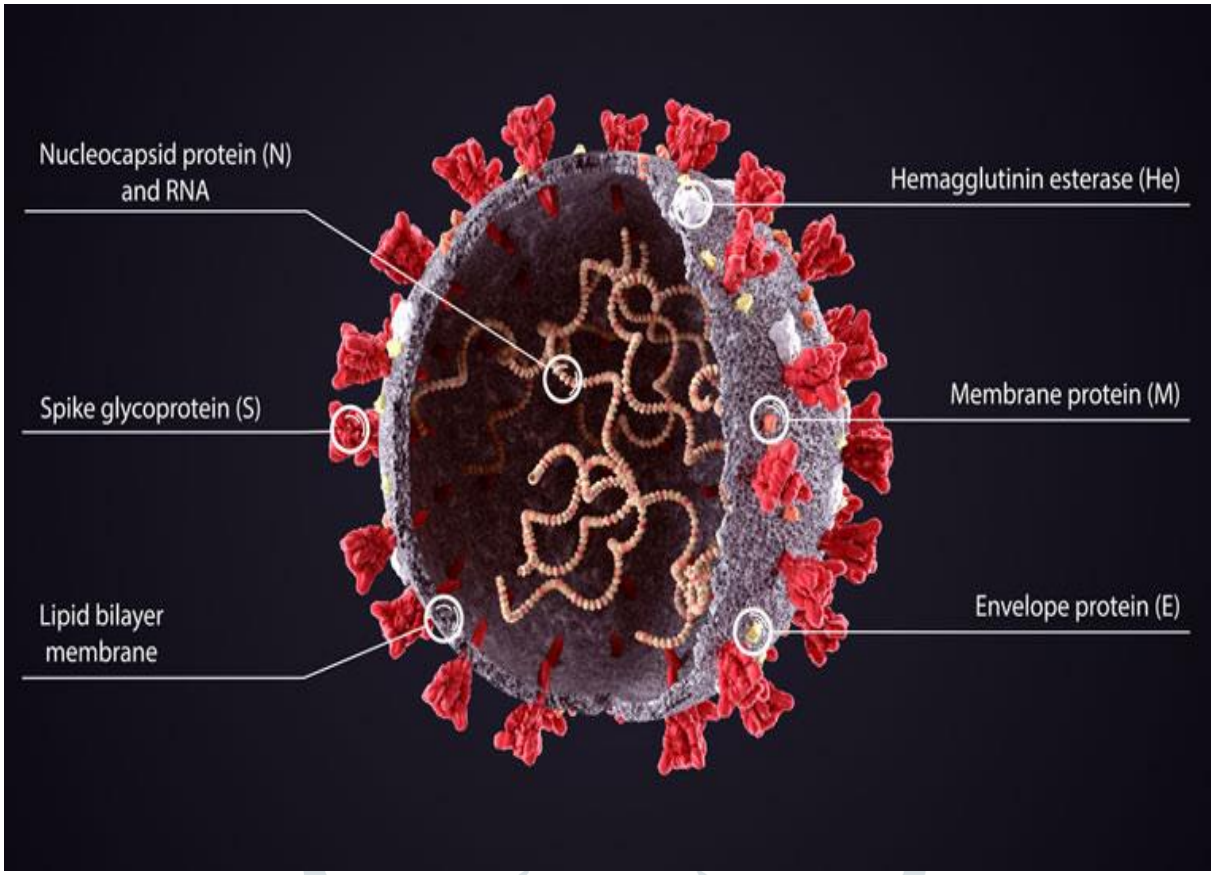


Figure No 1:The Noval Coronavirus

Source - Google Wikipedia

Corona viruses shape are huge, roughly sphere-shaped particles with a uncommon surface structure.This size of virus with a diameters of 80 to 120nm is extremely unstable by means ofusual but corona virus has their different variant so Covid virus acute sizes are also ranges from the diameter ranges 50 to 200 nm. With around 40,000kDa of its total molecular weight**.[7]** The virus enclosed in cover surrounded by a huge quantity of protein molecules. Corona virus is covered with lipidlayer, nucleocapsid and the membrane protein, when it is outer surface the host cellit defend the virus**.[8]**

The lipid bilayer envelope virus to which the spike[S] membrane[M] and envelope[E] structural proteins are fixed**.[9]** The ratio is around 1:20:300of E:S:M in the lipid bilayer**.[10]**Structural proteins M and E proteins is made from a layer of lipids,waxy fats and as well as maintain the shape and size of the virus out layer.**[11]**Generally spike glycoprotein are required for the communication with a host cell and give a crown like appearance. But in this human coronavirus is something strange because side for the host cell bind with M protein, and not with its S protein**.**The envelope is 85 nm in diameter. The surrounding virus in micrographs of electron appears as a separate pair of thick electron shells.**[12]**

The protein M is inessential structural protein of this covering which bring up the whole shape and also it is a type 3 membrane protein. M protein has amino acid residue upto 218 to 263and makes a thick layer of 7.8 nm.**[13]**M protein has three regions, one Nectodoain terminal and one Cendodomain, which extend three times around the transmembrane region. The spherical C-terminal is a matrix that calculates the greater envelope density. During the protein amino terminal domain, various organisms may have N or O-associated glycans. In

assembly, envelope development and virus cycle pathogenesis, the protein M is important. The protein M is essential.**[14]**

The proteins E in various species are extremely variable and small structural proteins. In coronavirus particle the E protein molecule have almost 20 copies. The size may vary from 8.4 and upto 12 kDa and also consists of the amino acids76 to 109**. [7]**These are the essential proteins and particularly have two domains C terminal domain and extra membrane transmembrane domain. These area out completely alpha helical, by only one alpha helical transmembrane domain,in lipid bilayer it make five molecular ion channel. These are accountable for intracellular trafficking, morphogenesis and also for virion group.**[13]**

In corona viruses the main specific characteristic feature are spikes and also accountable for similar to halo or corona like appearance. There are almost 74 surface spikes in coronavirus particle. Each spike has a duration of about 20 nm and also a S protein trimmer. **[15]** However, The transmembrane of the S-protein is composed of subunits S1 and S2. The Homotrimeric S protein is an intermediate fusion protein class I that binds the host cell and virus to membrane fusion and receptor. The subunits S1 are the head of the pin and are fastened by the receiver (RBD). The S2 subunits are a stem that ancher the spike in the viral envelope and enables the fusion when protease is enabled. Both sub units remain uncovered on the viral surface and unconnected to the host cell membrane. They remain uncovered.**[13]** In an operationally working condition, three S1 are attached to two S2 subunits. The subunit composite is break down into single subunits when the virus unite and combine with the host cell through the action of proteases as an example cethepsin family and protease serine (TMPRSS2) of the host cell**.[16]**Infection-based S1 proteins are the most critical component. They are the irregular elements because they are responsible for the specificity of the host cell.**[15]**

Some of the Virologist says that COVID-19 is identical to both MARS and SARS virus. Up till now we discovered successfully six human corona virus have been reported. Its including human coronavirus 229E(HCoV -229E), OCH3 (HCoV-NL63), HKUI (HCOV-HKUI),NL63 human coronavirus, Severe acute respiratory syndrome (SARS COV) and Middle east respiratory disorder corona virus (MERS-CoV). Covid species subdivided into two different strain and makes seven strain of human corona virus together, till now.

On this report in the past history between 2002 and 2003, SARS diseased contaminated around 8000 people and 774 people have died. In 2012, WHO registered the 2494 people infected and 858 kills by other corona virus named MERS-CoV (Middle East respiratory syndrome Corona virus) and spreading around 27 countries (WHO report 2003, 2013).

INFECTION:

The risk factor for corona viruses varies greatly. Some people may destroy more than 30 percent of others who have been contaminated and some are relatively innocuous, such as common cold. Although for most people COVID-19 causes only mild illness with serious symptoms, like fever, sore throat, loss of smell (95%), headache, nasal congestion, rhino rhea, muscle pain and swollen adenoids. It may lead to viral pneumonia, bacterial or bronchitis pneumonia. Moreover, the 2003 SARS CoV, causing SARS, was shown to

be a human corona virus, so both upper and lower respiratory tract infections are caused. It has a peculiar pathogenesis. **[17,18]**

Present study shows people of any age can be infected by novel Corona virus Covid 19.These symptoms are generally mild and begin progressively.There are also patients with Covid 19 that are optimistic but do not develop problems or feel ill. Around 1 in 6 individuals afflicted with COVID-19 become critically sick and have trouble breathing.The most common risk of developing chronic illnesses is for the elderly and those with different ailments including blood pressure, asthma, cardiovascular complications, breathing diseases and cancer.

Most of the person can be infected primarily through the close contact, blood borne, air borne transmission, fecal oval, sneezing and coughing, mother to child transmission. This pandemic able to rapidly increase from one individual person to other throughout tiny droplets from the nostril in the mouth are transmit while a CoVID-19 infected people cough and through the droplets of respiratory produce when an infected person sneeze or cough while talking. The approximate transmission route is hardly proven clearly but infection mostly happens when people are in close contact with each other for the long time. The Covid-19 infected person can transmit to another person for upto 2 days as long as 14 days (probable range usually may differs from 2-10 days, 2-14 and also 10-14 days) ,for the duration of which the virus is infectious but the patient remains asymptomatic before oneself show any sign, as can people who do not have any sign of Covid.However person stay contagious for up to ten days after beginning of symptom in the moderate cases and in severe cases it usually lasts up till 20 days. There are no known surfaces where the Virus COVID-19 could be present, although it sounds like other corona viruses. Some tests, however, suggest that the virus could survive for a few hours or several days on the soil. Because the temperatures of the surface type can vary under different conditions. If the surface can be contaminated, a single sterilizer may be used to clean up the infection and protect you and others.

SYMPTOMS:

The symptoms begin 1 to 14 day after contact to the virus. The person who develop visible symptom like generally (80%)patients build up mild to modest symptoms like pneumonia, even as 15% patients show severe symptoms Eg. Heavy breathing, Dysfunction and upto 60% develop lung disease or 6% patients experience from serious sign like shock, respiratory malfunction, multiple organ damage**.[19]** Some person who are infected with Covid 19stay asymptomatic and do not build up and show any symptoms during infected time. It is capable of reach virus to each other. Few patients show long term Covid effects or month after recovery and organ damage but mostly patient's health is good after recovery**. [20]**

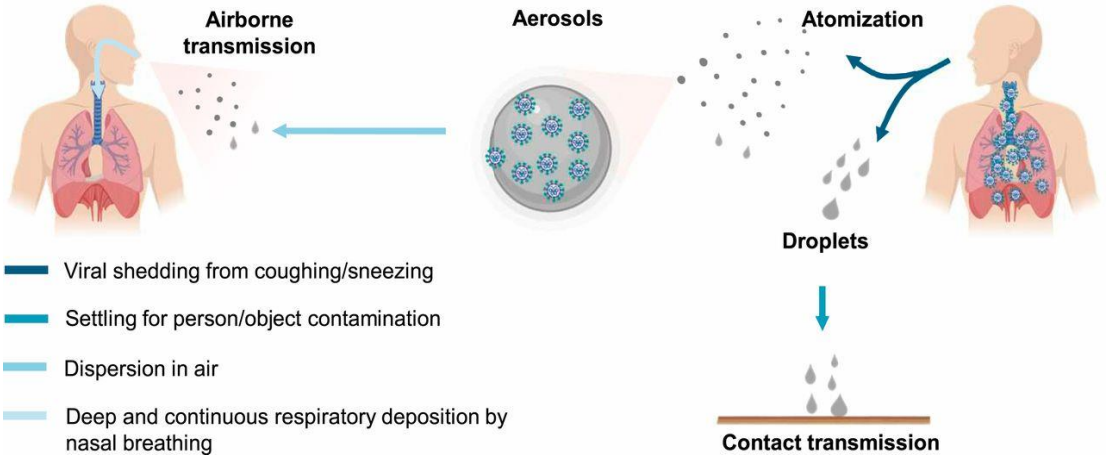


Figure No2: Virus transmission

Source: Google Wikipedia

Clinical symptoms related with Covid-19:

The COVID-19 patient are divided into three category based on their current symptoms with mild, moderate, or severe illness and acute symptoms. It involved critical Pneumonia, sepsis, septic shock and acute respiratory distress syndrome. In the beginning identification of suspected cases concede for suitable starting of Infection Prevention and Control and early detection of persons including critical situation permission for straight away provide helpful healthcare treatment, according to national protocols quick admission or referral to ICU. The patients who have mild symptoms, their hospital care and analysis cannot be essential except there are chances of deterioration of illness. The patients who are discharged from hospital are educated if there is decline of health then they have to return to hospital. The patients have mainly common showing symptoms which are Fever (98.6%), Fatigue (69%),Dry cough (58%),shortness of breath(30%),body ache(35%), loss of taste and smell, loss of appetite (40%) or Diarrhea. **[21]**

Table No –1: Patient'symptoms category

S .N.	Patient	Symptom
1	Mild patient	No Sign of Pneumonia, asymptomatic patient, in children symptoms have non severe pneumonia has dry cough and shortness of breathing.
2	Moderate patient	Fever, cough, headache, shortness of breathing and Respiratory Symptoms with Radiological Finding of Pneumonia.CT scan,

		ECG, X-rays, lung ultrasound
3	Severe patient	Respiratory rate≥30/Min, Oxygen saturation less than93%on room air PaO2/FiO2 ratio ≤ 300Lungs Infiltrate >50%in 24 - 48 hr, Chest in drawing, rapid breathing child with <60 days,2-11 month ≥50,1-5 yr old ≥ 40.ICU,diagnosis is medical facility.
4	Critical patient	Septic Shock, Multiple Organ Failure Like Reduce Urine Output, ARDS, Hypotension, Cold Extremities,ventilator patient, Respiratory Failure, Oedema

On the other hand, some specialists say the effects of covid19become visible to person to person depend on their immunity system. The World health organization and the CDC (Centre for disease control) have said to the two category of people are mostly affected by the disease which are eldery people and those who faces serious medical conditions. However the people who are old aged and have weak immunity faces difficulty to fighting off with Covid19. People who are previously facing the health condition like heart disease, diabetes, tuberculosis or lung disease have more chances to infect with severe symptoms. People with these fundamental problems have a low immunity and cannot fight off the infection from the virus. However, even if you are young and healthy you need to take the necessary precautions.

PREVENTION:

Everybody protect yourself and other from getting sick with this virus and reduce your risk of infection. However it is well known that the finest approach to avoid or decrease COVID-19 virus is to be rational knowledge regarding this disease and stop spread out in our society, everyone stay home and secure in follow several safety measures and check your local advisory where you work and live. Keep updated about the Covid-19.

According to WHO Guideline[22,20]

- Continuously rinse our hand with soap, hand washer as well as alcohol based hand wash or running water whenever hands are dirty.
- Fully cover up our mouth along with nose while sneeze and cough with tissue, hanky also elbow.
- Avoid splitting in public area and around the people.
- Avoid close contact with each other when you have cold or flu like symptoms.
- Maintain Social distance 2m maximum range with each other.
- Stay away from contact with farm animal or live wild.
- If experiencing symptoms like fever, breathing difficulty, cough and any sick symptom look for early medical care and share the history of travel and stay in contact with nearly medical health advisor.

- Wear face mask, gloves.
- Avoid crowded place, stay at home,
- Use the alcohol based hand sanitizer (60%),if no water or soap is available.
- Avoid to touch your nose, eye,mouth with unwashed hand.
- Disinfect and clean the surface.
- Wash your hand between handling raw and cooked food.

How to wear the mask –[20]

- Before you put on your mask clean your hands, and also earlier and later you get the mask off, furthermore we touch the mask anytime.
- Also ensure that mask fully cover up our mouth, nose and also chin.
- Make sure after we get the mask off, it store in a dirt free synthetic carrier and wash it off daily either if mask is a cloth, otherwise dispose in a trash bin if it is a medical mask.
- Don't use masks if it has valves.

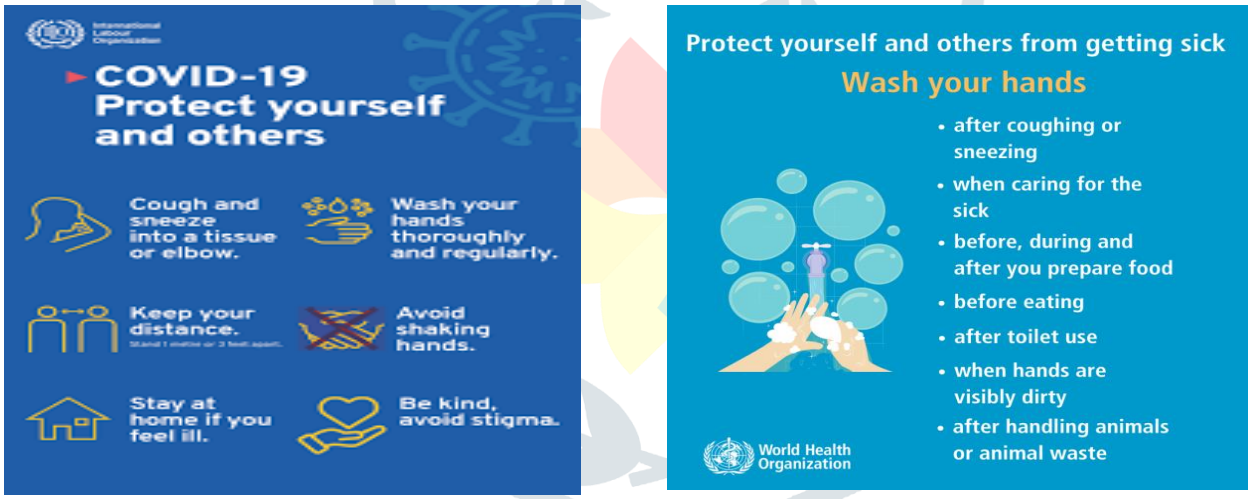
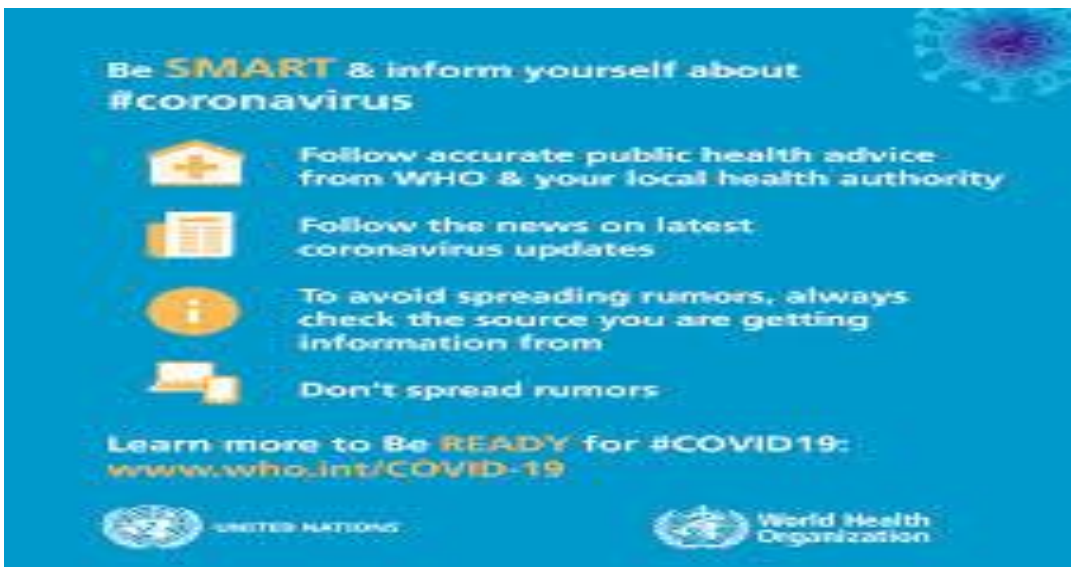


Figure No 3: That show some public awareness through these poster



In the beginning, the main concern in front of the world is to save lives of people. Maintain social distancing, lockdown are the solitary solutions to manage the spread of the virus, which is mainly rigorously followed by the many countries around the world as a lockdown.

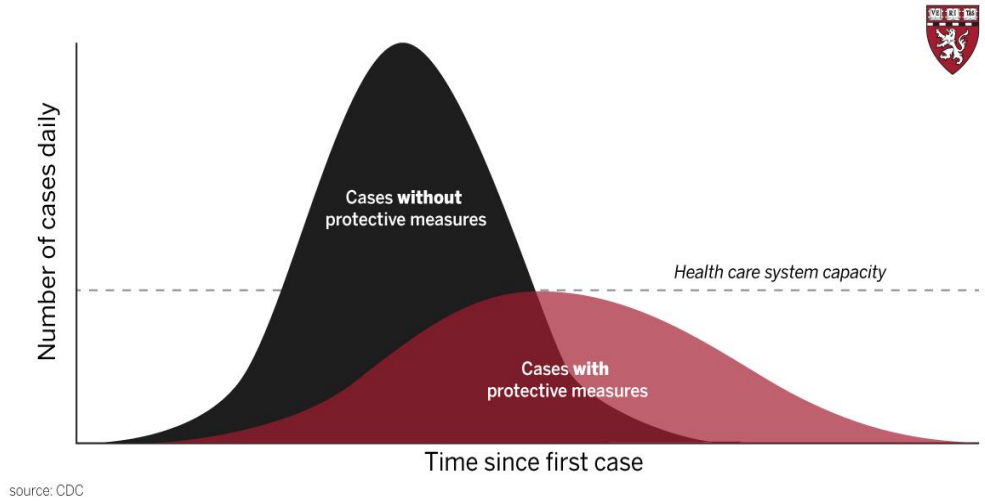


Figure No 4: The above chart shows how the protective measures such as restrictive travel, avoiding crowds, social distancing, and regular handwash can slow down the expansion of new COVID-19 cases and trim down the risk of intense health care system.**[23]**

Source. Harvard medical school

Patient infected with Covid 19 after recovery they get infected again it is unknown. As an example in one study of China says some people are positive for COVID-19 after recovery they get positive again. It is not clear that it is a recurrence, or a new infection, or a case where the person never recovered completely. The Fred Hutchinson Cancer Research Center in Seattle scientists say that in every 15 days interval this virus genetic code 30,000 letter changes by one letter. Recently it is not exactly known how many change is needed for the virus to appear different enough to the immune system of somebody who had a earlier version of it for it to cause a new infection.

CURRENT STATUS OF WORLD:

The top ten country with highest figure of infected cases are USA, India, Brazil, Russia, Spain, Italy, United Kingdom, France, Turkey, Germany in respect of the death patient list. United states is top of the list.

Table No 2 : The top ten country with highest case and death

COUNTRY	CASES	DEATH
U.S.A	27,897,214	483,200
India	10,871,060	155,399
Brazil	9,662,305	234,945
Russia	4,012,710	234,945

United kingdom	3,985,622	78,134
France	3,3885,622	114,851
Spain	3,023,601	80,443
Italy	2,668,266	63,704
Turkey	2,556,837	92,338
Germany	2,311,297	27,093

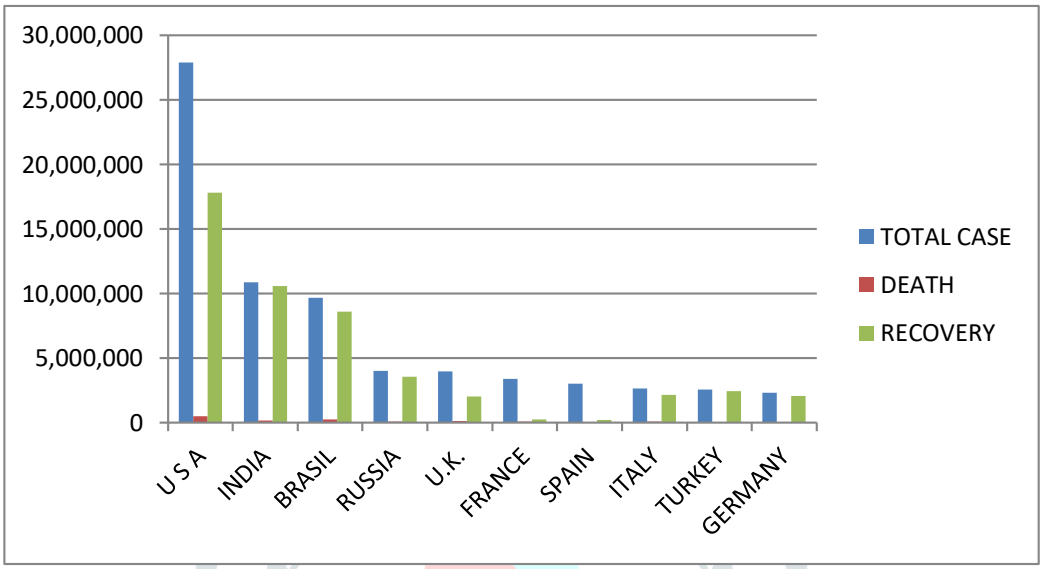


Figure No 5. Distribution of Covid cases across various countries, total cases, death and recovers.

Sources: WORLDOMETER DATA

As per the study of WHO (World Health Organization), to computing the corona-virus condition in any countries Worldo meter website data are used. The website as well as the World Health Organization administers the country-wise present circumstances of Corona virus data to recognizing the health organization and global community to build an improved durable judgments in this existing virulent disease.

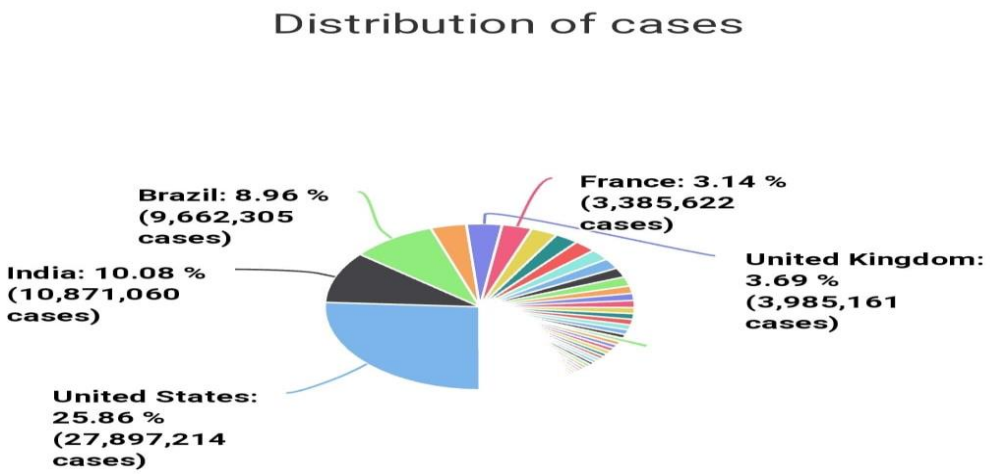


Figure No 6: Distribution of cases whole world

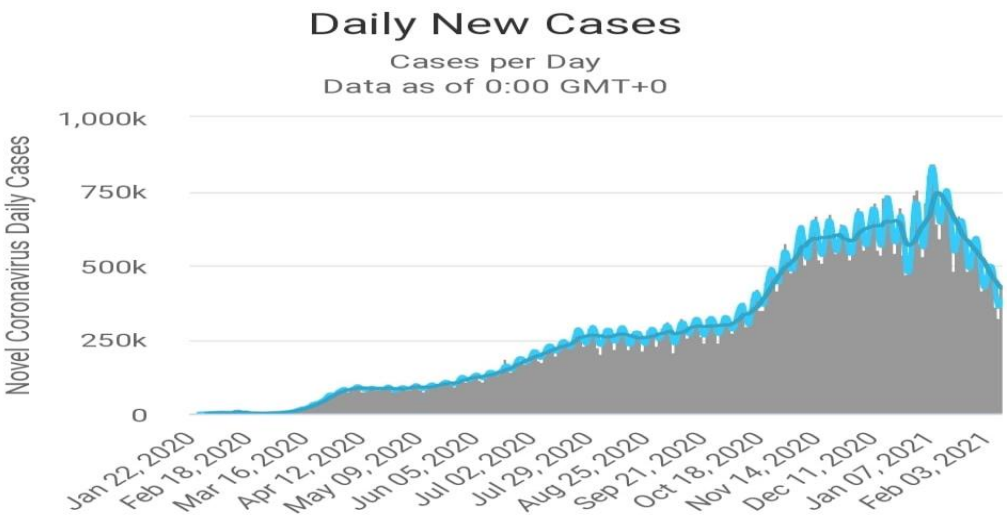


Figure No 7: ON 11 February, New case 3,04,166 and 7 days avg is 4,61,148

Source : WWW.WORLDOMETER.COM

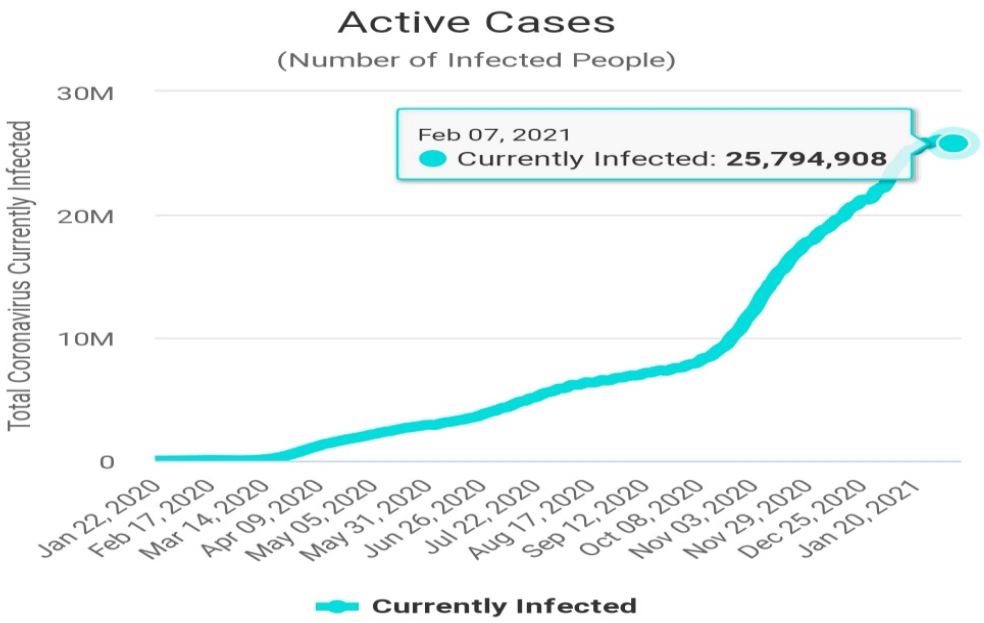


Figure No 8 -TOTAL CASES=TOTAL CUMULATIVE COUNT (107,959,817) SINCE JAN 22,2020

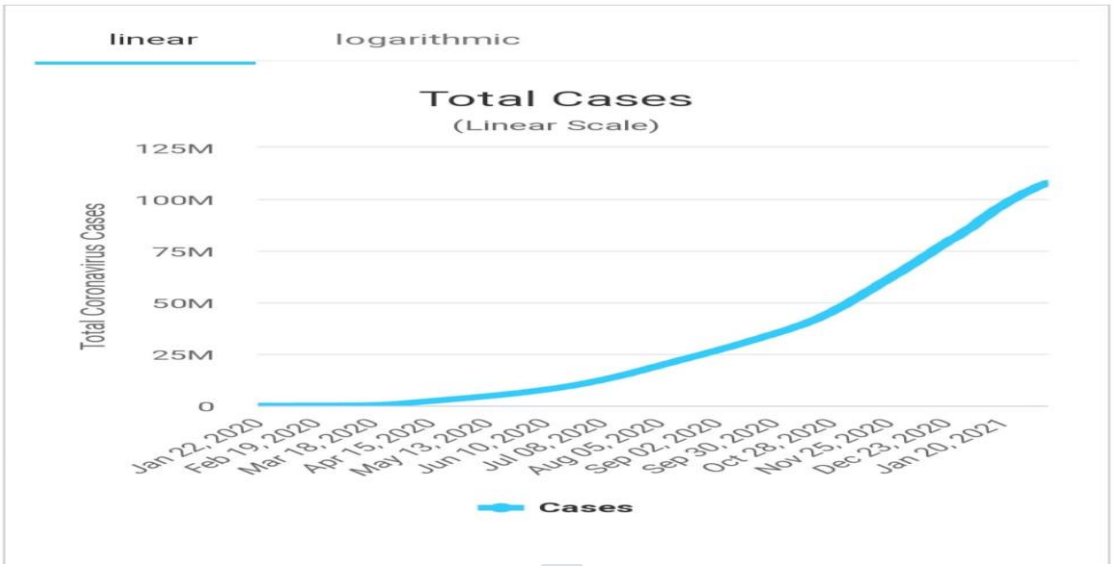


Figure No 9 : Currently infected cases or Active cases.

Source .Worldometer

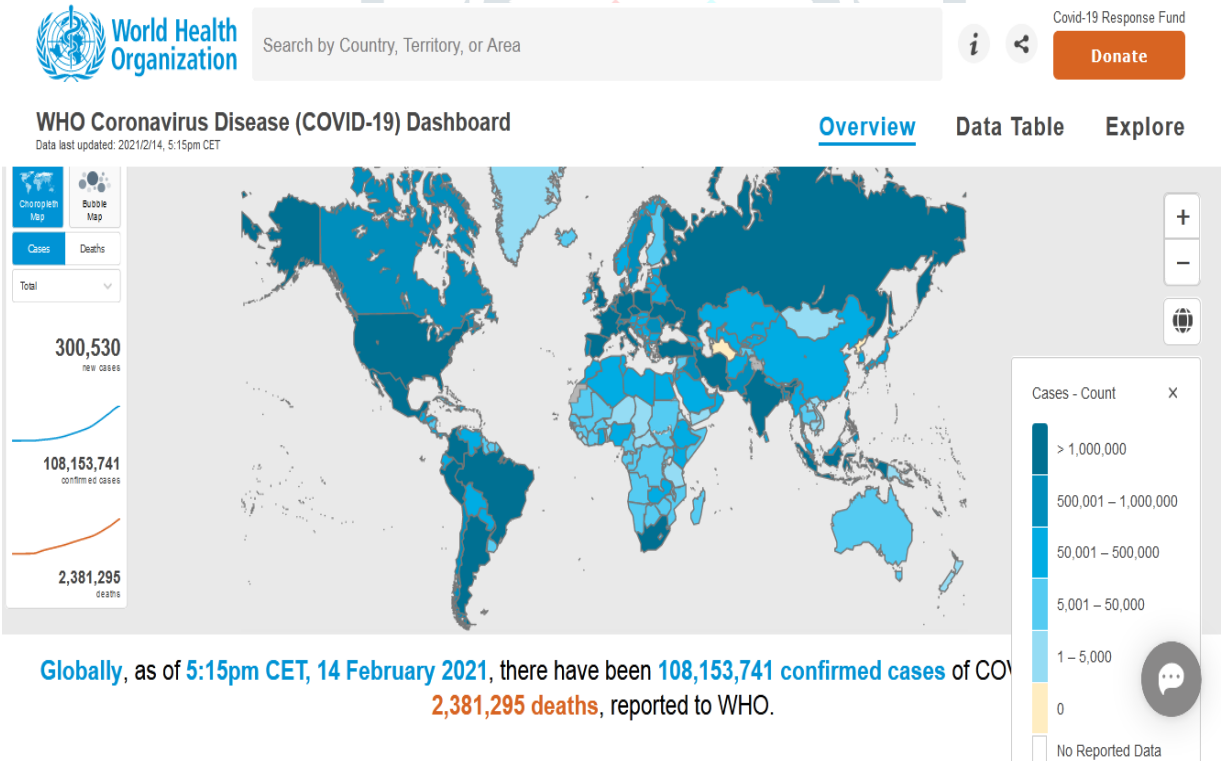


Figure No 10 : Dashboard show Covid affected country[24]

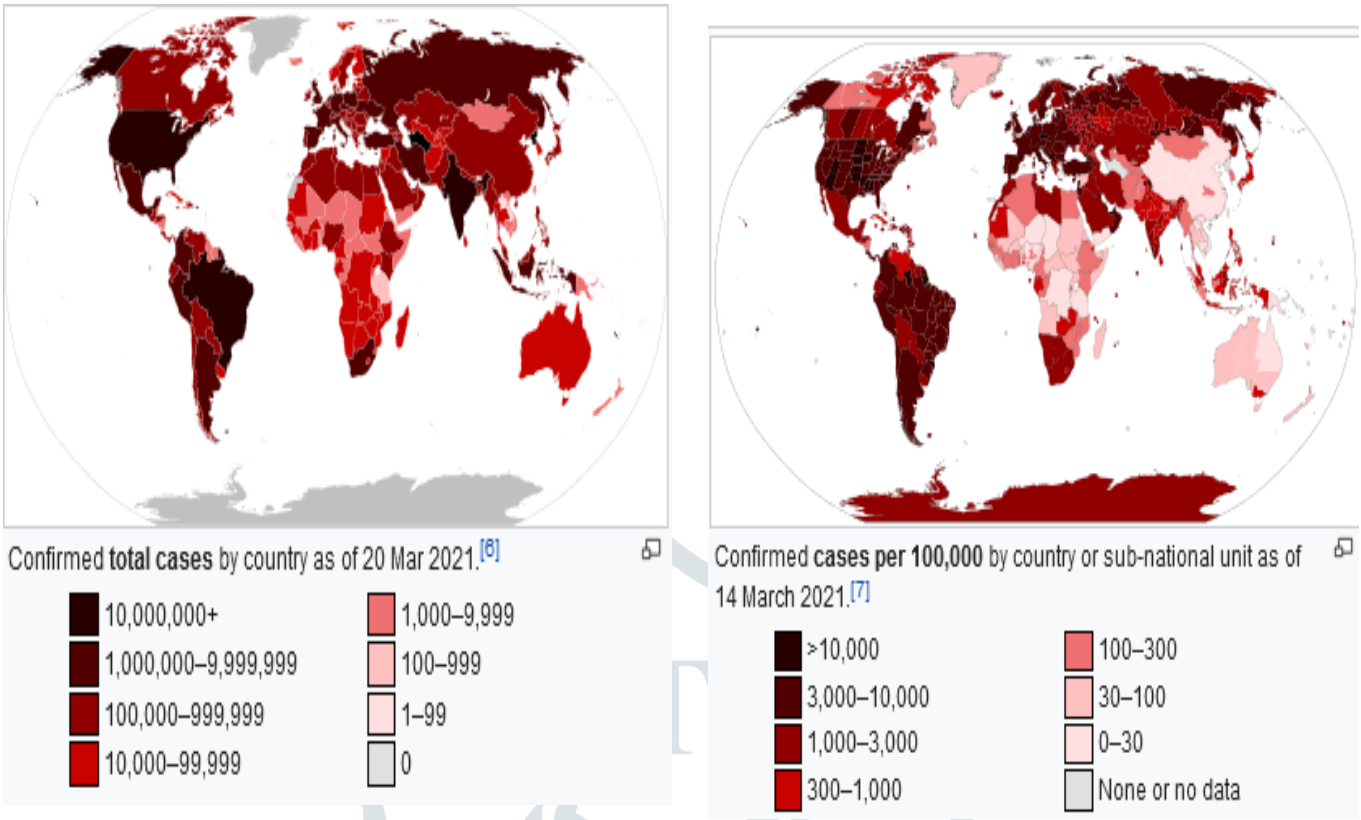


Figure No 11 : Show worldwide cases distribution on the bases of march 2021

CONCLUSION:

We summaries available clinical feature data to help prospective COVID-19 patients in making COVID-19 prevention, diagnostic, therapy, and preventive choices. We collected data for this study from several sources, including research publications, Worldometer data, WHO guidelines, and other social media platforms, including Facebook, the Daily Health Bulletin, newspapers, and official government statistics for our country. My study includes completing a survey on the epidemic's fast expansion and its detrimental impact on people's physical and mental health.

REFERENCE:

1. Kaushik, S., Kaushik, S., Sharma, Y., Kumar, R., & Yadav, J. P. (2020). The Indian perspective of COVID-19 outbreak.*Virusdisease*, *31*(2), 146-153.

2. Kachroo, V. (2020). Novel Coronavirus (COVID-19) in India: Current scenario. *International Journal of Research and Review*, *7*(3), 435-447.

3. Dhamodharavadhani, S., Rathipriya, R., & Chatterjee, J. M. (2020). Covid-19 mortality rate prediction for India using statistical neural network models. *Frontiers in Public Health*, *8*.

4. *Fan Y, Zhao K, Shi ZL, Zhou P (March 2019).* "Bat Coronaviruses in China". *Viruses.* ***11*** *(3): 210.*

5. *Almeida JD, Berry DM, Cunningham CH, Hamre D, Hofstad MS, Mallucci L, McIntosh K, Tyrrell DA (November 1968).* "Virology: Coronaviruses". *Nature.* ***220*** *(5168): 650.*

6. "Definition of Corona by Merriam-Webster". *Merriam-Webster.* Archived *from the original on 2020-03-24.*

7. *Masters PS (2006).* "The molecular biology of coronaviruses". *Advances in Virus Research.* ***66****: 193–292.*

8. *Neuman BW, Kiss G, Kunding AH, Bhella D, Baksh MF, Connelly S, et al. (April 2011).* "A structural analysis of M protein in coronavirus assembly and morphology".*Journal of Structural Biology.* ***174*** *(1): 11–22*

9. *Lai MM, Cavanagh D (1997).* "The molecular biology of coronaviruses". *Advances in Virus Research.* ***48****: 1–100.*

10. *Godet M, L'Haridon R, Vautherot JF, Laude H (1992).* "TGEV corona virus ORF4 encodes a membrane protein that is incorporated into virions". *Virology.* ***188*** *(2): 666–75.*

11. *Fehr AR, Perlman S (2015). "Coronaviruses: an overview of their replication and pathogenesis". In Maier HJ, Bickerton E, Britton P (eds.). Coronaviruses. Methods in Molecular Biology.* ***1282****. Springer. pp. 1–23.*

12. *Neuman BW, Adair BD, Yoshioka C, Quispe JD, Orca G, Kuhn P, et al. (August 2006).* "Supramolecular architecture of severe acute respiratory syndrome coronavirus revealed by electron cry microscopy". *Journal of Virology.* ***80*** *(16): 7918–28.*

13. *Lalchhandama K (2020).* "The chronicles of coronaviruses: the electron microscope, the doughnut, and the spike".*Science Vision.* ***20*** *(2): 78–92.*

14. *Schoeman D, Fielding BC (May 2019).* "Coronavirus envelope protein: current knowledge". *Virology Journal.* ***16*** *(1): 69*

15. *Neuman BW, Kiss G, Kunding AH, Bhella D, Baksh MF, Connelly S, et al. (April 2011).* "A structural analysis of M protein in coronavirus assembly and morphology". *Journal of Structural Biology.* ***174*** *(1): 11–22.*

16. *J.Alsaadi EA, Jones IM (April 2019).* "Membrane binding proteins of coronaviruses". *Future Virology.* ***14*** *(4): 275–286.*

17. *Liu P, Shi L, Zhang W, He J, Liu C, Zhao C, et al. (November 2017).* "Prevalence and genetic diversity analysis of human coronaviruses among cross-border children".*Virology Journal.* ***14*** *(1): 230.*

18. *Forgie S, Marrie TJ (February 2009). "Healthcare-associated atypical pneumonia". Seminars in Respiratory and Critical Care Medicine.* ***30*** *(1): 67–85.*

19. *"Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus* Disease (COVID-19)". U.S. Centers for Disease Control and Prevention (CDC). 6 April 2020.

20. https://www.who.int/emergencies/diseases/novel-coronavirus. prevention of covid 19, WHO guideline.

21. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. The Lancet. 2020;395(10223):497-506. Google Scholar PubMed Central.

22. Coronavirus disease: What you need to know. World Health Organization.

23. Prevention chart for safety measure according to HARVERD HEALTH PUBLISHING 2021.

24. Novel Coronavirus (2019-nCoV) situation report - 1. World Health Organization. 2020 Jan 21.

25. *COVID-19 vaccine development pipeline (Refresh URL to update)". Vaccine Centre, London School of Hygiene and Tropical Medicine. 1 March 2021.*