

## Prediction of COVID-19 Cases Over Globe with Expeditious Recovery

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### ABSTRACT

In the year 2002, first human was reported as infected by coronavirus named SARS (Severe acute respiratory syndrome) which was recognised in 2003 in Guangdong province of china. Populace of 26 countries were infected from this deadly virus ended with 8000 cases in 2003. This virus is transmitted from individual to individual. Initial symptoms include dry cough, difficulty in breathing/ choking and diarrhea. This virus was originated from bats. Previous studies have shown the emergence of novel coronavirus with high probability of its occurrence in china. Now, we are facing similar epidemic situation from the same class of virus named COVID-19 (Coronavirus disease 2019). Warnings related to this epidemic situation heard but unheeded. Initial symptoms of this disease are very much like SARS. This research aimed to find out the important factors responsible for the outburst of COVID-19 and different methodologies used by experts to diagnose, detect and cure it. Results describes the world-wide confirmed, suspected, recovered and death cases. More-over the time-series forecasting prediction is used to predict the confirmed, recovered and death cases. This research is concluded with the precautionary measured suggested by experts who are monitoring COVID-19 cases.

**Key words:** COVID-19, Viral Infection, Coronavirus, Bats

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### INTRODUCTION

Coronavirus comes from coronaviridae and nidovirales family. The Coronavirus genome has the second largest RNA. Due to this big size it has the high replication capability and thus creates its replicas at much higher rate. Coronavirus is adaptive in any host and cause disease and infection in animals as well as humans. Many researchers thought that the source of this virus is bats as they are the only mammal which flew and covers much longer distances as compare to other. This may be the hypothetical believes as the correct source is still not revealed.

#### Vulnerable china

This is the third time coronavirus of the similar family originates and causes an epidemic situation. Same country, same family, same type

of situation but the agent is different. China is the hub of eatable wild, domestic, birds, seafood and almost all kind of living species except humans. In 2002 the outburst of SARS infects almost 8000 lives and killed nearly 774. The second is in 2016 named SADS Coronavirus resulted in deaths of 24693 piglets [1-4]. This pandemic situation occurs in the same province where SARS originated i.e. Guangdong. Now, this is the third one named COVID-19. It was pre-predicted by many researchers, but the authority fails to realize such type of situation. There may be many reasons including high tensions on economic crises [5], forceful establishment of authoritarian regime over Hong Kong [6], persecution of Uighurs Muslims [7] and many other internal crises.

#### Impact on the world

On one side oil is produced at \$2-\$6 a barrel in Gulf countries whereas on other side around 4.5 lakhs confirmed cases around the world resulted with 19000+ deaths. The outburst of COVID-19 around the globe shields the various authorities

to hide their governance failure and internal crisis. The oil price war between OPEC, Russia and US creates a global financial crisis. Many people lost their jobs who are working in these oil producing companies.

**COVID-19 an epidemic situation**

Till now, there are 4,36,159 confirmed cases and 19,648 deaths around the world. Out of which 1,11,847 cases are recovered. Figures 1 and 2 shows the cumulative confirmed and active cases around the globe. From the Figures 1 and 2, it is clearly visible that Europe, Middle East Asia and America are highly affected.

**Public tools to slow the spread of COVID-19**

**Isolation:** Separating the people who are having

this virus and keeping them under isolation for a period of around 14 to 21 days. This methodology is also used for Ebola virus cases.

**Quarantine:** Limiting the movement of COVID-19 infected people and keep them under surveillance so that they do not infect others.

**Social distancing:** Try to avoid large crowd and keep minimum of 1-meter distance while meeting with others in order to slow the spread of COVID-19 [8].

**Basic precautionary measures**

Clean your hands with soap or alcohol-based sanitizers as alcohol is highly volatile. The volatility property is inversely proportional to adhesiveness which means that dirt or any other



Figure 1: Shows the cumulative confirmed cases around the globe.



Figure 2: Shows the cumulative active cases around the globe.

pollutant will not retain on surface and fade away with alcohol [9].

Eat hygienic food and don't use the food survived up to 3 days as the evidences suggest that number of viruses continuously grows on hard surfaces [10].

Use of proper mask to cover sensitive areas of face and cover the face with arm while sneezing or coughing.

Cover your hands while handling raw food, money, drinking or smoking.

Avoid conversation with people having any other kind of respiratory illness.

Consult experts if found any symptoms related to COVID-19.

Do not try to follow any rumour or news from unknown sources like WhatsApp, Face book, Instagram or Twitter.

#### **Symptoms of COVID-19**

Dry coughing and sneezing.

Fever.

Shortness of breath.

Bluish color of lips or face due to lack of inhaled oxygen.

There is a misconception among people about fever. Average body temperature is about 98.6-degree Fahrenheit, so  $\pm 2$  to this temperature is not a fever. Various staff engaged to detect the symptoms of COVID-19 are even unaware of it and creates a panic situation among the people. Thermometer-guns are widely used to classify the suspects [11].

#### **Methodologies used by Experts to Cure COVID-19**

Sawai Man Singh (SMS) Hospital Jaipur India: A combination of Lopinavir around 200mg and Ritonavir around 50mg is given to the COVID-19 positive cases twice a day. These drugs are used in HIV treatment. Along with these two drugs, combinations of some other drugs including Oseltamivir and chloroquine which are used in swine flu and malaria treatment are also given. This treatment resulted in the recovery of the patients [12].

The symptoms of COVID-19 may take 2 to 14 days or even more to appear. After detecting the physical symptoms which are already discussed in section 1, now the role of doctor initiated where

the doctor first takes the sample of saliva, nasal and throat swab or urine for testing. Since there is no such proper antiviral for the treatment of COVID-19 but based on the doctor's keen sense of judging the disease, he/she may recommend pain reliever drugs including acetaminophen or cough syrups [13].

A drug named 'Remdesivir' is used widely to treat COVID-19 infected patients which is officially recognized by WHO and many experts from US-based pharmaceutical companies. This drug is used for the treatment of Ebola Virus [14].

Apart from these treatments, experts are regularly monitoring the COVID-19 infected cases and tried hard to find a drug used to cure COVID-19.

#### **Confirmed vs. Active cases**

Till 25 March 2020, 7:20 IST, there are 4,36,159 confirmed cases out of which 19,648 deaths and 1,11,847 recovered. Thus, using the basic equation of equivalence,

Active cases = Confirmed - Recovered - Deaths

Therefore, Active cases =  $436159 - 111847 - 19648 = 304664$ .

#### **Confirmed vs. Recovered**

Around 26% of the total confirmed cases are recovered around the globe. It is recommended to follow the precautionary measure which is discussed in section 1 and if found anything critical then directly consult the expert. Figure 3 shows the daily increase of COVID-19 Confirmed cases from 22 January 2020 to 22 March 2020. Figure 4 shows the gradual increase of COVID-19 Confirmed cases from 22 January 2020 to 22 March 2020.

## **RESULTS AND ANALYTICS**

The Dataset consists of Confirmed, Recovered and Death cases [15] to perform future prediction. The dataset carries day-wise Confirmed, Recovered and Death cases from Jan-22-2020 to Apr-05-2020. The time-series forecasting predictive technique is implemented to predict the Confirmed, Recovered and Death cases till Apr-30-2020. The Arima model is prepared using python programming and is trained on dataset from Jan-22-2020 to Apr-05-2020. Since the growth is only upwards and no such large variation is formed, thus the predicted results only shows the growth rate of Confirmed, Recovered and Death cases till Apr-30-2020.

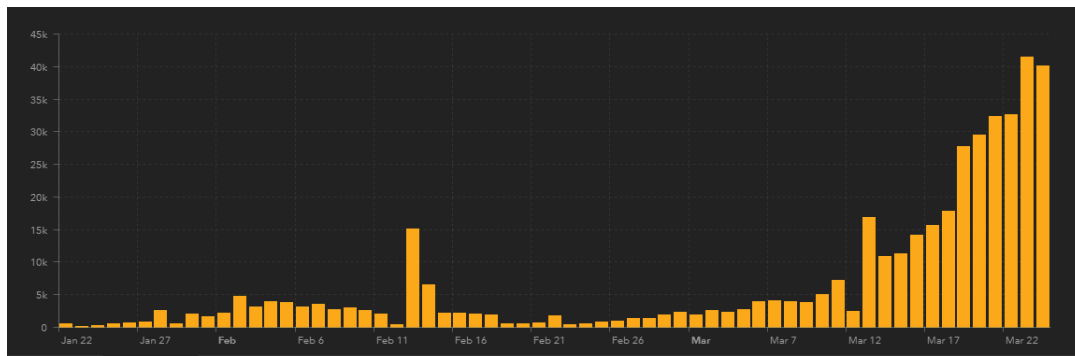


Figure 3: Shows the daily increase of COVID-19 Confirmed cases.



Figure 4: Shows the gradual increase of COVID-19 Confirmed cases.

As clearly seen, Figure 5 illustrates the Confirmed, Recovered and Death cases from Jan-22-2020 to Apr-05-2020 and Figure 6-8 shows the predicted cases. Moreover, Table 1 shows the day-wise predicted Confirmed, Recovered and Death cases from Apr-07-2020 to Apr-30-2020.

The results shown in Table 1 are an alert about how much critical the situation is going to be if it is not controlled.

**Immediate Remedy**

As shown by Table 1, This outbreak is unstoppable with immediate effect. There is a need to break its spread chain. Drugs like ‘Chloroquine phosphate’ used for curing malaria can be used as immediate remedy only after the prescription of health expert [16-17]. Mentioned drugs in section 2, are also used to fight against COVID-19. Universal Lockdown is recommended to avoid large gathering.

**Various Do’s and Don’ts are suggested to follow accordingly**

**Do’s**

- Clean yourself daily and properly.
- Eat healthy and Hygienic Food.
- Use Alcohol based sanitizers.
- Wash your hands and face properly with soap and water.

Cover your face and hands while handling anything.

Keep social distancing and isolation.

**Don’ts**

Never perform any type of experiment at home to cure COVID-19.

Don’t use any drug without consultation of expert [18].

Don’t follow any information regarding COVID-19 from Unknown sources.

Don’t get panic if you found some symptoms of COVID-19 in yourself. Just contact to the helpline numbers.

**CONCLUSION**

In this article, we have clearly mentioned various preliminary symptoms and precautionary measures that help to aware the people not to get panic while dealing with such an epidemic situation. The Prediction of COVID-19 cases from 7-Apr-2020 to 30-Apr-2020 is performed whose insight is minacious to living beings. Further, various methodologies are discussed which are widely and expeditiously used to recover the patients detected COVID-19 positive. This article draw attention towards the alarming alert about

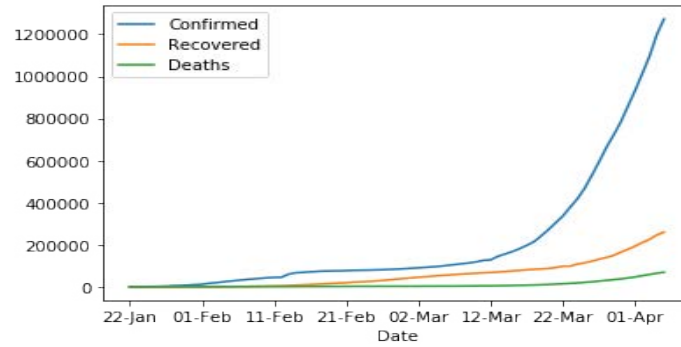


Figure 5: Shows Confirmed, Recovered and Death cases from Jan-22-2020 to Apr-05-2020.

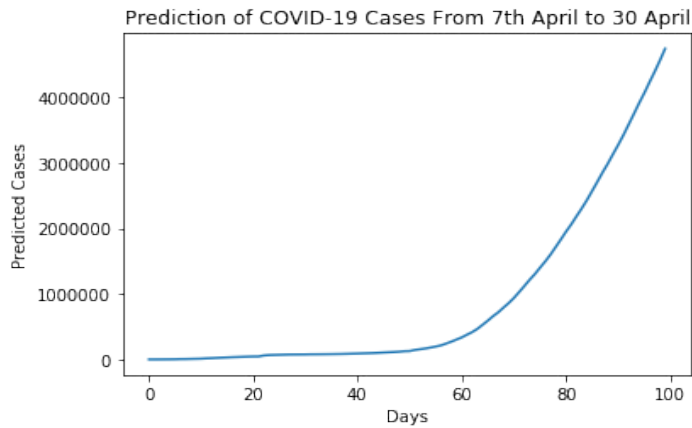


Figure 6: Shows predicted confirmed cases from Apr-07-2020 to Apr-30-2020.

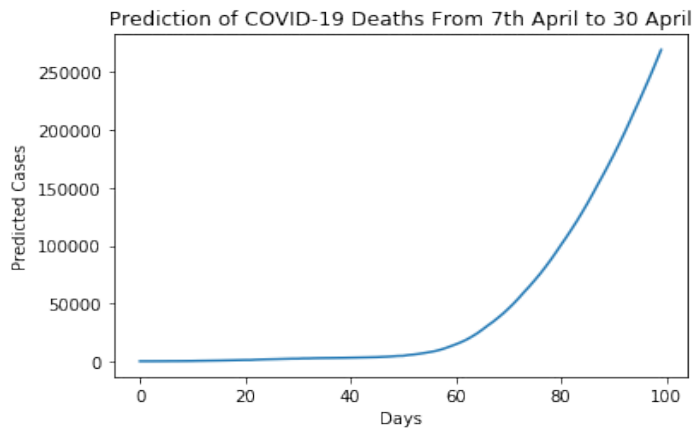


Figure 7: Shows predicted Death cases from Apr-07-2020 to Apr-30-2020.

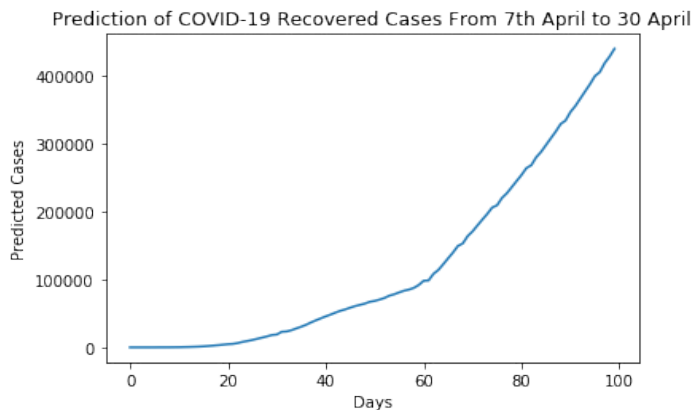


Figure 8: Shows predicted recovered cases from Apr-07-2020 to Apr-30-2020.



**Table 1: Shows the predicted confirmed, recovered and death cases from Apr-07-2020 to Apr-30-2020.**

Confirmed	Recovered	Death
Day 7: 1302042	Day 7: 205530	Day 7: 64849
Day 8: 1400677	Day 8: 208871	Day 8: 70089
Day 9: 1496054	Day 9: 219595	Day 9: 75503
Day 10: 1600132	Day 10: 226542	Day 10: 81353
Day 11: 1715653	Day 11: 235526	Day 11: 87447
Day 12: 1832678	Day 12: 244554	Day 12: 93966
Day 13: 1952387	Day 13: 253466	Day 13: 100704
Day 14: 2063476	Day 14: 263573	Day 14: 107270
Day 15: 2186465	Day 15: 267805	Day 15: 114155
Day 16: 2305895	Day 16: 279483	Day 16: 121214
Day 17: 2433733	Day 17: 287434	Day 17: 128711
Day 18: 2572729	Day 18: 297434	Day 18: 136452
Day 19: 2712951	Day 19: 307462	Day 19: 144621
Day 20: 2855583	Day 20: 317350	Day 20: 153009
Day 21: 2989330	Day 21: 328395	Day 21: 161227
Day 22: 3134718	Day 22: 333522	Day 22: 169764
Day 23: 3276293	Day 23: 346058	Day 23: 178478
Day 24: 3426028	Day 24: 354829	Day 24: 187630
Day 25: 3586680	Day 25: 365619	Day 25: 197028
Day 26: 3748322	Day 26: 376416	Day 26: 206855
Day 27: 3912143	Day 27: 387058	Day 27: 216902
Day 28: 4066855	Day 28: 398848	Day 28: 226780
Day 29: 4232987	Day 29: 404720	Day 29: 236979
Day 30: 4395093	Day 30: 418002	Day 30: 247356

how much critical the situation is going to be if it is not controlled with humanity and harmony.

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