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Mathematical Analysis of Corona Virus Disease

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ABSTRACT

In this paper we develop the mathematical model for awareness corona virus disease 2019. The parameter specified I, C, L and t. It has been observed that the chain of infected person depends on lockdown and social distance. Again we observed that the total suspected person depends upon infected chain person and lockdown.

KEYWORDS: *Awareness, human history, pandemic, Athenian plague, Justinian plague, SARC*

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INTRODUCTION

In human history our societies has shaped out breaks of infectious diseases. These phenomena have been given in branches of medicine. In the entire history one the greatest catastrophers was on outbreak of a pandemic[3,7]. The pandemic outbrakes have decimated societies, determined outcomes of wars, wiped out entire population. Plagues have been closely examined of humanities is the real history. Modern humanities have been affected individual and group by plagues. The pandemic has shaped the specialty of psychiatry. Pandemic outbraks are the considered a part of very ending of humanity. In human history those events continue to be commemorated in the religious practices throughout the world.

The Athenian plague is documented event between city states of Athens and Sparta. The Athenian plague originated in Ethiopia and it spread throughout Egypt and Greece. Initial symptoms of plague were the headaches conjunctivitis, a rash covering the body and fever. The victims would cough up blood, suffer from painful stomach and vomiting[8]. The infection person would die by Eight day.

The Atoninc plague was documented and recorded by contemporary physicians of time. This is also known plague of Galen[6]. The Roman Empire was weaking in military and economic by the impact of this plague.

The Justinian plague was real plague pandemic. The Justinian plague generally followed trading routes exchange of infections as well as goods. Military movement at that time spreading the disease from minor Asia to Africa and Italy. The first symptoms of this plague was fever and fatigue. The disease progressed rapidly and infected person died within day. The victims would seized and madness. Many person died painfully when their budoes gangrened. This interpretation of the plague will reappear during the block death and play a much central role affected the societies[5].

The plague was originated in China and arrived in Europe. It spread through central Asia, northern India by Silk Road. The mortality of Black Death varied between regions. The plague broke-down the normal divisions between the upper and lower class. The shortage of labor in the long run encouraged innovation of labor saving technologies and higher productivity.

The experiences of ancient culture had dealt with diseases medieval societies between the passages of time. The first quarantine was enacted in Ragusa. The quarantine remains in effect in the present time as a highly regulated. It is true that global pandemic with devastating for societies across the globe[4].

HIV/AIDS is a slowly progressing global pandemic through decades of time. Population bringing new challenges with every new group. HIV affects about 40 million people globally.

Small fox was highly contagious disease. Variola virus was highly contagious disease with prominent skineruption.

Serve acute respiratory syndrome was the first outbreak in twenty first century. SARS corona virus started in china and affected fever than 10000 people in china and Hongkong.

Swine flu started in Mexico April 2009 and infected 10% of the global population. Its death rate was lower than the regular influenza death rates.

The novel corona virus disease covid-19 started of Wuhan China back in December 2019. This virus has spread all over the world. The pandemic has also managed to attract more eyeballes towards the wildlife. On February 24, 2020 Chinese government to impose a permanent ban on the trade and consumption of wild animals for food. The virus was named as serve acute respiratory syndrome corona virus-2 by internation committee.

The trade of wild animals for medicine, pets and scientific research will carry on china, although it will be approval and quarantine procedures. According to Chinese CCDC said that 72 314 confirmed, suspected cases of covid-19 in 11 February2020. The probability of death rate male and female are 2.8% & 1.7%. Public health concerns are being globally how many people are infected and suspected.

Corona virus has been spread in air travel so laksh of people are dying by corona virus in all over the world. In this infection patient with fever dry cough, headache, hypoxemia and dypned. Death may be result for failure of respiratory. This unknown infection transmitted from person to person quickly. This infection has spread from china to all over world[9]. According to who report about 4% infected people have been died. Death may be result of progressive from respiratory failure. Infected person chain decreases much important factor of this disease[10,11].

The purpose of this paper is to develop a mathematical model to know about the suspected and infected person of this disease.

Method: Covid-19 was collected for the published literature. We introduce the general approach of modeling is important tools for decision that can we useful for human diseases.

Formulation of the problem

The detail some of the model outputs will be performed. This model is of relevance studies in particularly in the real approach.

In this model influence of the people by corona virus is dynamics.

Let S(t)be the total suspected people at time t, then rate of change;

$$\frac{DS}{DT} = S(I + C - L) \quad (1)$$

Where
I= infected person
C= chain of person
L=
Lockdown in which social distance maintained

Boundary condition

$$S = S_0 \text{ at time } t=0 \quad (2)$$

Separate the variable, equation (1), we get

$$\frac{dS}{S} = (I + C - L)dt \quad (3)$$

Solution of the problem

Integrating equation (3), we get

$$\log s = = (I + C - L)t + \log A$$

$$S = e(I + C - L)t + \log A$$

Or

$$S = e(I + C - L)t \, .e^{\log A} \quad (4)$$

Applying the boundary condition (2), we get

$$S = S_0^{e(I + C - L)t} \quad (5)$$

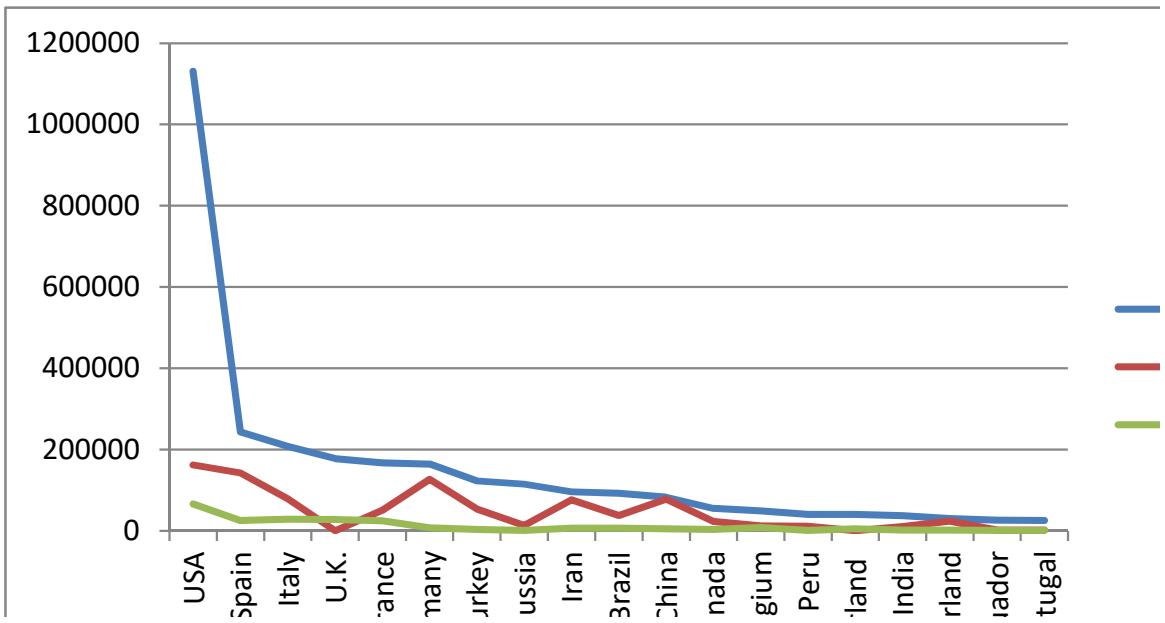
Result and conclusion

This present paper propose a more realistic model of explaining the suspected person from corona virus. The suspected person chain has been examined social distance in lockdown. It is clear that suspected person depends upon chain and lockdown. It is also clear that chain of infected person totally depends upon social distance or lockdown. It has been observed that increases the social distance in proper time decreases. Discuss the chain of infected person and decreases suspected person.

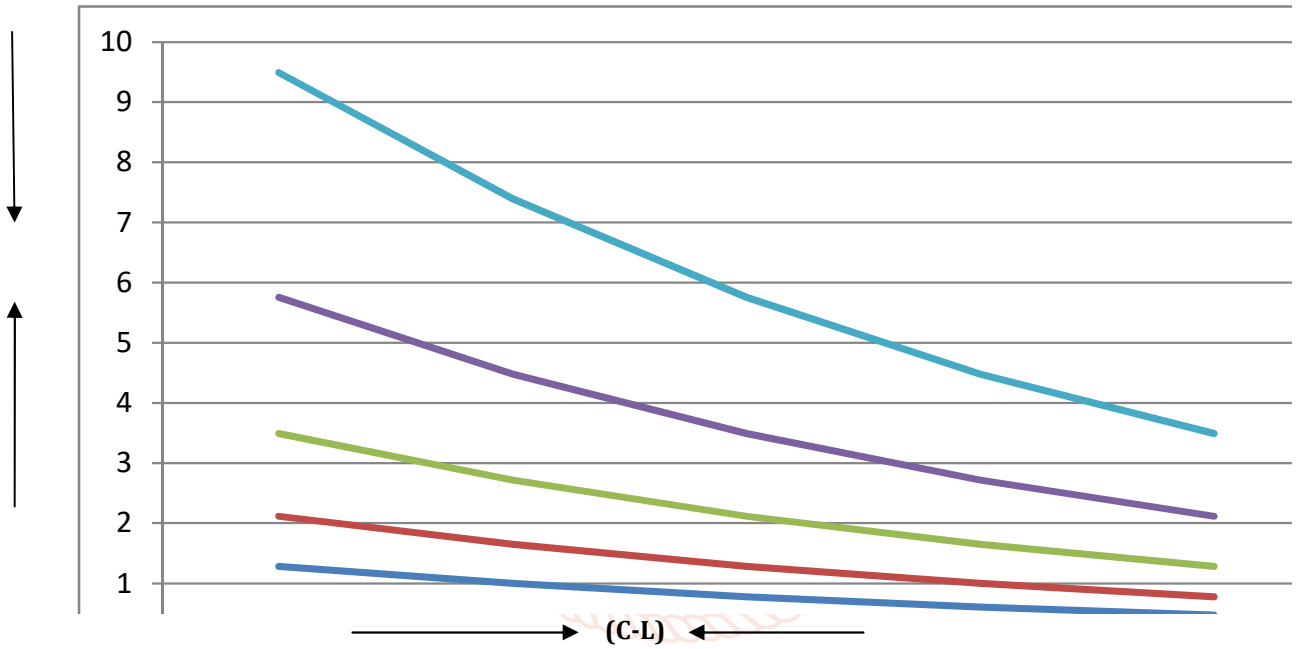
Discussion

From the graph it is clear that Indian government is taking suitable decision in proper time. In this decision Indian government hardly maintained lockdown in whole country so the suspected person rate increases slowly. In this way we can say that the graph of Indian suspected person and dead person is low in compare to the other countries of the world.

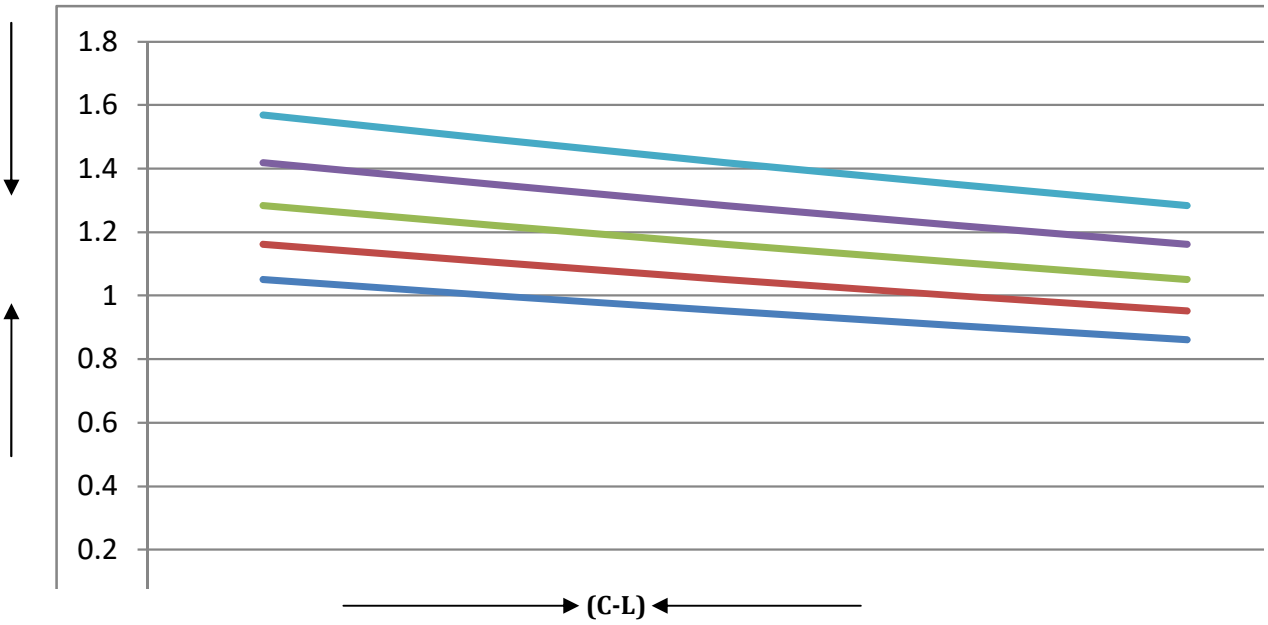
Finally it has been observed that the whole world is catching up Indian system and try to control the chain of infected person. It is also clear that suspected person and chain of infected person decreases which lockdown in social distance.



Corona cases in India comparing other Countries at 2 May 2020 Fig. (1.1)



Variation of total infected person for different value of S_0=1, t= 0.5 Fig. (1.2)



Variation of infected person for different value of S_0=1, t= 0.1 Fig. (1.3)

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