

## SPREAD OUT OF CORONA VIRUS IN HUMAN BODY AND ITS EFFECTS IN DAILY LIFE AS WELL AS EDUCATION

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### ABSTRACT:

The outbreak of corona virus disease has a great impact on our everyday life and it also has created a global health crisis due to its *Case Fatality Rate*. It spreads due to close contact of people with infected persons exposed to sneezing, coughing, respiratory droplets or aerosols. Due to this disease lots of people have died and many people are under treatment. That means *Covid-19* has become the greatest threat to global public health. It basically causes an unfavorable conditions inside our bodies by interfering with the numerous physiological processes of various physiological organs and changing the natural homeostatic control of the entire human body. This virus is basically use to maintain its population inside the alveoli (small air sacs called pulmonary alveoli, or simply alveoli, serve as the fundamental respiratory component of the lungs) and it also generate immunological response of the host by increasing the synthesis of *IL-1* and *IL-6*. Due to this virus government of different countries has postponed all types of mass gathering events in different parts of the world like-religious events, social events, cultural programs, educational programs, games or sports etc. That means *Covid-19* badly effects on the world-wide health sector and day-to-day life of our human society and also on the global teaching-learning system. Thus, in this present paper I intend to show how corona virus spreads in human body and about its impact on society as well as education.

**KEY WORDS:** COVID-19, corona virus, outbreak, health, education.

### INTRODUCTION:

In present situation *Covid-19* is a big concern for all of us. It is also a major public health concern for the world's population. Many people have died as a result of this illness, and many more receiving treatments. As a result, *Covid-19* has emerged as the biggest hazard to public health world-wide. This simply create an unfavorable environment inside our bodies by interfering with the multiple physiological process of multiple organs and by altering the body defense mechanism. As it spreads in human body by close contact with an infected person that is why, government has declared to cancel or postponed all mass gathering programs. That means it is very necessary to maintain social distancing among the people. Due to *Covid-19* pandemic in everyday life peoples are facing lots of problems. Peoples are unable to fulfil their daily works like earlier days. Students are also facing lots of problems in their educational field due to shut down the educational institutions. Though online classes are going on still students are not fully satisfied in this online teaching-learning method.

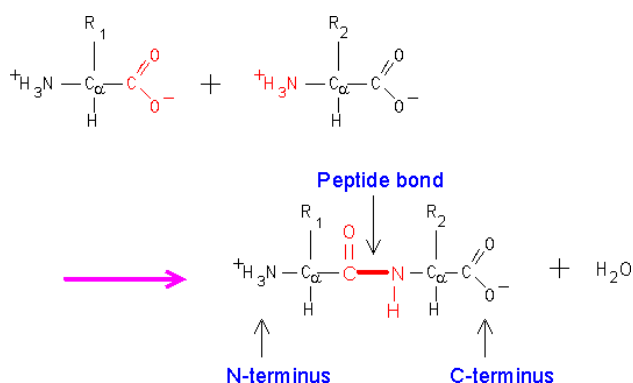
Moreover, in rural areas for the students who belong to poor families it is more difficult for them to attend online classes as they do not have necessary equipment to attend such classes. That means corona virus greatly impacts on the daily life of human being. Now in my paper I have discussed about the basic understanding of corona virus disease, how it spreads in human body and its impacts on human life as well as education system.

### SOURCE AND CONCEPT OF COVID-19:

The outbreak of “Covid-19” has started from the Wuhan which is the city of China; in the year of **2019 on 17<sup>th</sup> November**. In India it has started from **5<sup>th</sup> march, 2020**. There are many virus families present in the world today. Among them **Covid-19** virus family is one of the most infected families in the world. Due to this spread out of viral infection now-a-days the condition of education system, communication system, GDP rate and economic system has become worse to worst. The term “Covid-19” shows both, the name of the virus and also the name of the disease. In this case the term “CO” means **CORONA**; “VI” means **VIRUS**; “D” means **DISEASE** and the **number “19”** has given because this infection has been started from 2019 and as it is responsible for respiratory diseases that is why the name of the disease is “SARS-CoV-2” (severe acute respiratory syndrome).

### THE NATURE OF CORONA VIRUS:

Mainly a virus is consisting with protein particle; and we know that protein is consist with chain of amino acid and amino acid is connected with each other by making the peptide bond. That means in reality a virus is nothing but a chain of amino acids. As “Covid-19” is a virus that is why it is also consists with a chain of amino acid or peptide bond. That means this virus is proteinaceous in nature. In human body, it spreads by the process of viral replication.

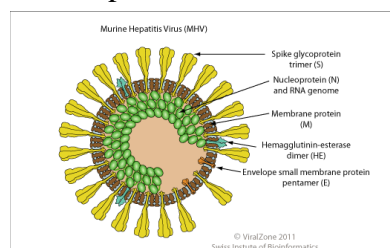


After the translation from the RNA of virus new protein molecules generates and from this protein molecules new viruses get formed.

### STRUCTURE OF CORONA VIRUS:

In the structure of corona virus, it can be seen that it is consists with mainly **spike protein**, **membrane protein**, **virus RNA**, **nucleocapsid protein (N)**, **envelope protein (E)**. The spike like structure over the membrane of this virus is known as spike protein and the genetic material present inside the virus is known as virus RNA and the protein which cover the membrane is known as membrane protein. The protein which interacts with membrane protein to form virus envelop is known as envelop protein and the protein which interact

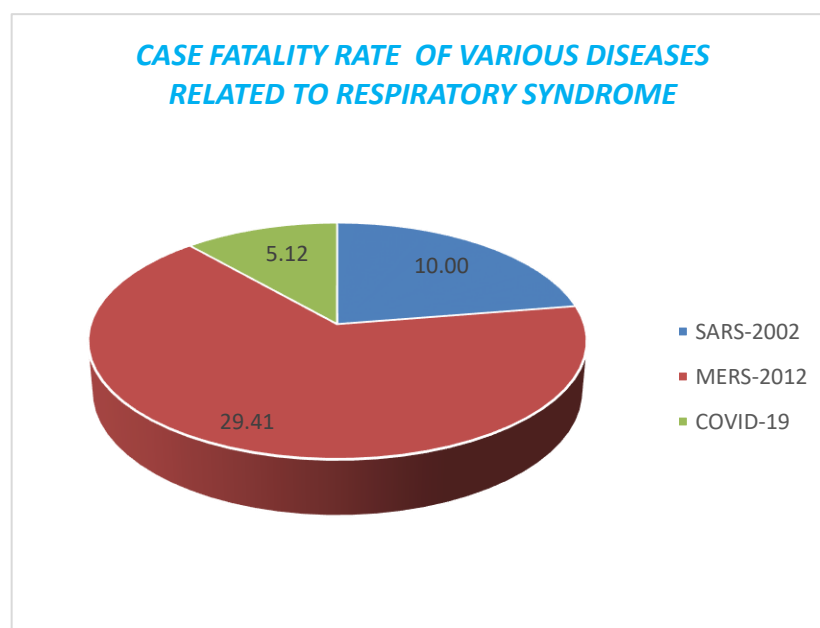
with virus RNA to form nucleocapsid is known as nucleocapsid protein and also the virus membrane is consist with some pore.



### CASE FATALITY RATE OF COVID-19:

Case fatality rate means the ratio between the number of death and total number of infected by this disease. We know that there are two more families of virus which are interconnected with the corona virus, like -

- **SARS-2002 (Severe Acute Respiratory Syndrome):** in the year of 2002 *SARS virus* out breaks in China like corona virus it also spread all over the world within few months. In case of *SARS-2002* it can be seen that the TOTAL NUMBER OF INFECTED = 8000; TOTAL NUMBER OF DEATH = 800. That means in this case the **CASE FATALITY RATE=  $800 / 8000 \times 100 = 10\%$**
- **MERS-2012(Meddle East Respiratory Syndrome):** In the year of 2012 *MERS virus* out breaks in China. In case of *MERS* the TOTAL NUMBER OF DEATH = 2500; TOTAL NUMBER OF INFECTED= 8500. That means in this case the **CASE FATALITY RATE=  $2500/8500 \times 100 = 29.41\%$**
- **COVID-19:** In the year of 2019 covid-19 has out breaks in China. In case of *covid-19* till today 25-06-2020 TOTAL NUMBER OF INFECTED = 94, 24000; TOTAL NUMBER OF DEATH =4,82580. That means in this case the **CASE FATALITY RATE=  $482580/9424000 \times 100 = 5.12\%$**



**EFFECT OF CASE FATALITY RATE IN THE SOCIETY & EDUCATION SYSTEM:**

It is the fact that the case fatality rate of *Covid19* is very low in comparison to the other viral diseases like the *SARS 2002* and *MERS 2012*. But in modern situation the communication system of our world is very high and the communication in between people to people has become very common that is why this virus can easily spread out inside the host cells. The only process through which we can prevent this viral infection is through maintaining Social Distance. Now to maintain this social distance we have to follow some rules and regulations like we should not travel in local train, in national or international flight, in city buss as well as in auto-rickshaw. Due to these circumstances students are getting highly affected. It has become very difficult for them to maintain their daily educational purposes. Now-a-days due to this pandemic situation classes are taken via different types of online apps; teachers as well as professors used to deliver their lectures by using online apps. Now the main problem arising out of these online classes can be divided into two categories.

**1. STUDENTS WHO BELONG TO PRIMARY LEVEL:**

Students of primary section is highly suffering due to these online classes; because as they are not well developed so that they cannot easily or freely handle such online applications. Due to this reason they have to go to their parents or guardians. Now the parents who are not well educated as well as the parents who are from very rural areas, they are not even able to handle such online applications properly; on the other hand, parents who are from city areas as well as well-educated background they can easily handle such online applications. Fact remains that maximum parent who is belonging in city areas they are service holders. That is why sometimes when classes are taken on the office time, children cannot contact with their parents if she or he faces any difficulties during online classes.

**2. STUDENTS WHO BELONG TO UPPER PRIMARY LEVEL:**

Students of upper primary level also faced difficulties during these online classes. As they are the students of upper primary level, they are well educated to handle such online applications. Now the problem arises in different phases like- some students who are economically very weak they cannot buy an android phone and some students who are economically weak but still have an android phone they cannot recharge their sim-card with a costly data pack. That is why students belonging to poor families are facing difficulties to attend such online classes. Now the students who belong to urban areas and economically developed families they also face some difficulties to attend such online classes. For example, in maximum cases students of urban areas have android phone and also, they are economically strong enough to recharge their sim-card with a costly data pack. But unfortunately, due to this pandemic situation as well as due to the lock-down period, in urban areas internet users are also increased by leaps and bounds. For this reason, due to this increased data consumer internet lacking issues are also increasing very rapidly. And for this internet lacking issues students of urban areas are constantly facing a difficulty to attend such online classes even though they have android smart phone with data pack.

**R-NOUGHT VALUE OF COVID-19:**

**R-NOUGHT** value means (in case of viral infection) how many people can be infected by only one person that means it actually indicates the degree of the outbreak of virus infection.

In case of **Covid-19** if we try to find out the **R-NOUGHT** value then it can be seen that one (1) person can spread his infection to another **three (3)** persons. That means the **R-NOUGHT** value of **Covid-19** is approx. **three (3)**. But in case of influenza virus, it can be seen that **one (1)** person can spread his infections to another **one (1)** person. That means the **R-NOUGHT** value of influenza virus is **one (1)**.

Example- a family is consisting with **four (4)** members (**ABCD**). Suppose in this family the **member A** is infected by influenza virus. Now as the **R-NOUGHT** value of influenza virus is **one (1)** that is why **member A** can spread his infections to either **B** or **C** or **D**. But if **member A** gets infected by corona virus, then **member A** can spread his viral infection among **B, C** and **D**. Because the **R-NOUGHT** value of corona virus is approx. **three (3)**.

**EFFECT OF R-NOUGHT VALUE IN ECONOMIC AND EDUCATION SYSTEM:**

As the **R-NOUGHT** value of corona virus is **three (3)** that is why the degree of spread out of this virus is also very high because if only one person gets affected in a particular society, he can spread his or her disease to another new three persons and these three persons can spread their disease to twenty seventh persons.

Now if we take an industry as an economical field; we know that an industry consists with numbers of workers who are belong to different areas of a country or world. Now among these thousand workers if only one worker gets affected by this virus, then this one worker can easily spread his or her disease to another three workers. And by this process all workers of this industry will be affected within few days or few months. Now to stop this spread out of viral infection maximum industries have been closed and due to this reason, a huge number of workers are suffering from unemployment. And as the industries become closed the productions of products has been also stopped, for this situation which actually effects on the economic system of a country as well as the world.

Now for the high degree of spread out of this viral infection students cannot attend their offline classes which organized by their respected schools and colleges and other educational institutions. Because if we take a highly reputed college or university or a highly reputed coaching institutions then it can be observed that thousand numbers of students are belong to those educational institutions. Now if a single individual will infect by this corona virus, then he or she can easily spread out his or her diseases to the rest of the students. That is why to stop this out break among the students it is highly necessary to shut down all schools, colleges, universities and other educational institutions.

**SERIAL INTERVAL OF COVID-19:**

From the onset of disease first patient to the onset of disease second patient is known as the SERIAL INTERVAL.

Example: suppose a patient p1 has infected by corona virus on Monday and patient p2 has infected on Friday of same week by contact of *patient p1*. In this case the difference of days in between infected of *patient p1* and *patient p2* is *four (4)* days. That means in this case the serial interval of *Covid-19* is *four (4)* days. In reality the infected person can able to do infect another person within *fourteen (14)* to *eighteen (18)* days. That is why if a person has infected by corona virus, he or she should be taken by him or herself under the home quarantine or facilitated quarantine. Because if he or she comes in contact with a normal person within these *fourteen (14)* to *eighteen (18)* days he or she can easily infect that normal person.

### RELATIONSHIP BETWEEN SERIAL INTERVEL AND EDUCATIONAL SYSTEM AND COMMUNICATION SYSTEM:

As *fourteen (14)* to *eighteen (18)* days is necessary to stay in quarantine of an infected person that is why from this situation we can easily say that he or she must not do any extra environmental works of his or her daily life. If the quarantined person is a student, then he or she cannot get in touch with his or her parents, teachers, and classmates and as well as other persons. So, for a student it becomes a highly time consumer. If the infected person is a daily worker, then for him it becomes tough to spend rest of the *fourteen (14)* days without doing any works as well as without any sought of income. From these situations we can say that may be these *fourteen (14)* days is necessary to get cure but on the other hand it will not be wrong if we say that *fourteen (14)* days is a long period either he or she is a student or worker. To extend the serial interval it is highly necessary for us to create a barrier in between communication system. Because, if we do not extend the serial interval and if we always used to communicate with one another then there is a high chance of infection of millions of people over the world within a few months.

In our country as well as in this world the lock down procedure is based on the idea of serial interval. Government always tries to increase the serial interval so that the rate of infection can be fall down. Because during this lock down period people will not get in touch with one another and if people do not get in touch with one another, then an infected person cannot spread his or her infection to a normal person. And for this there will not rise any new cases, and also the old cases will be recovered within this lock down period.

### HOW CORONA VIRUS SPREAD IN HUMAN BODY:

SARS-COV2 (*Severe Acute Respiratory Syndrome*) is mainly affecting our respiratory organ. Our respiratory tract is consisting with nostril, nasal cavity, pharynx, larynx [upper respiratory tract]; trachea, bronchi, alveoli, lungs [lower respiratory tract].

Corona virus can only enter our body or a host body by using our respiratory systems and first time it affects in the upper respiratory system. When it affects our upper respiratory system at that time scientist considered that this is a mild syndrome of corona virus. Because at that time patient feels little bit difficulties in breathing. But if the virus enters into the lower respiratory organs, then becomes little bit difficult for a patient as well as his body immunity system to cope up from this disease. Because at that time our innate immunity will fall down to destroy this virus.

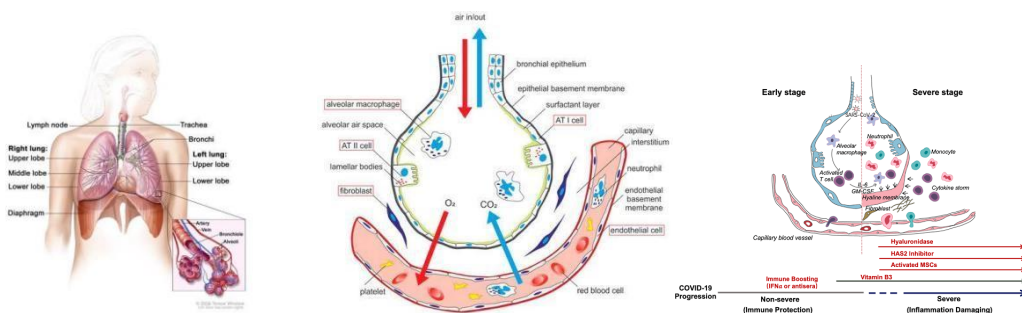
That is why at that time it is necessary to have an anti-body for our immune system to destroy this virus and protect our body.

Corona virus increase or generate more and more number in our alveoli. The alveoli are where our body exchanges oxygen and carbon dioxide into the blood stream.

The oxygen will come into the alveoli as well as blood from the environment by the process of inspiration (from environment to alveoli) and diffusion (from alveoli to blood stream); similarly, the carbon dioxide will emit out from the body by the process of diffusion (from blood stream to alveoli) and by the process of expiration (from alveoli to environment). Our alveoli consist with two types of cells- **type 1 alveolar cell** and **type 2 alveolar cell**. Both cells are found in the inner membrane of alveoli. **Type 1 alveolar cell is responsible for the gaseous exchange** and **type 2 alveolar cells are responsible for the production of surfactant** (this is the compound which is responsible in lowering the surface tension between the gas and the membrane of alveoli so that gaseous exchange can occur freely).

When corona virus will enter into our lower respiratory tract especially in the alveoli at that time this virus will affect the **type2 alveolar cell** but it will not much more affect the **type 1 alveolar cell**. If we observe a **type 2 alveolar cell** under an electron micro scope, we can find that over the surface of **type2 alveolar cell** there is a special type of receptor present to bind with the spike protein of corona virus and the name of the recaptures **Angiotensin Converting Enzyme Type 2**. This receptor is consisting with special binding side or active side for this spike protein. Due to this reason the corona virus will easily able to bind with this **Angiotensin Converting Enzyme Type 2** by its **spike protein**.

After binding this receptor, the RNA of this virus, it enters into the cytosolic part of **type 2 alveoli cell**. After entering into the cell, it converts by ribosome and after the transcription and the translation new proteins molecule get formed. Now these protein molecules will convert into specific shape (**Round Shape + Spike Protein Shape**) by the action of **Protease Enzyme**. On the other hand, the single virus RNA which has covered by the ribosome in the **alveolar type 2 cell** will be convert a greater number of similar RNA by the presence of **RNA-Dependent RNA Polymerase**. Now the round shape structure of protein and the spike shape protein (both has formed after the action of **Protease Enzyme**) will bind with each other and thereafter the viral RNA (which has formed of **RNA-Dependent RNA Polymerase**) will enter into the round shape structure-**spike protein** complex to complete a whole structure of corona virus. By this process from a single corona virus a multiple number of corona-virus get created in our alveoli as well as in our body.



The corona virus enters into the blood stream and it started to release different types of toxic material which further stimulate the secretion of *interleukin-1* and *interleukin-6 from the activated mast cell*; these *IL-1* and *IL-6* go to the hypothalamus and stimulate our hypothalamus to generate the action potential to release prostaglandin hormone. The function of prostaglandin hormone is to increasing the body temperature and when the temperature gets increased in our body, we feel fever. We know that the normal body temperature is  $37^{\circ}\text{C}$  and an experiment also proves that the optimum temperature of corona virus is  $34^{\circ}\text{C}$  to  $35^{\circ}\text{C}$ . This virus can survive in our body at even when body increases its optimal temperature, because the virus will be under go genetically mutation process. Besides when viruses completely collapse the alveoli at that time there will also decrease the rate of gaseous exchange. Due to this the pressure of oxygen will be decreased and for this the chemo receptor will be activate and parasympathetic nervous system will be deactivated and sympathetic nervous system will be activated; **as sympathetic nervous system will get active; the heart rate will also increase as well as blood pressure also increase.**

The normal respiratory rate of a person is about *16 times/min* but after getting infected by corona virus due to these above reasons the normal respiratory rates will get changed and it will increase *30-50 times/min* compare to normal.

This is how a single corona virus generates multiple numbers of corona viruses and how they effect in our whole-body system.

### **BODY IMMUNITY SYSTEM AGAINST CORONA VIRUS:**

In our body there are mainly two types of immunity present one is **Innate Immunity** which is a nonspecific in nature and second one is **Acquired Immunity** is a specific in nature. When corona virus enters into our body at first, body activates the first defense mechanism which is the innate immunity. But if innate immunity fails to destroy this virus, the body activates the second and strong defense mechanism which is the specific immunity. In this case the specific immunity first identifies the characteristics of virus and thereafter it starts to secrete or form a special type of antibody for this virus particle. If the specific immunity forms a specific anti-body to destroy this virus, then body can easily cope up from this disease. On the other hand, if specific immunity cannot develop any anti-body against this virus, then it becomes tough to get cured from this disease. At that time to protect our body from this virus we need vaccine which can protect our body from this disease.

On the other hand, there are not only single *alveolar type 2 cells* present in our alveoli. There are multiple alveolar type 2 cells present in our alveoli. Now when a virus affects a single alveolar cell at that time if the alveolar cell can generate action potential to its neighboring cell that a foreign particle has entered into our body then it becomes more helpful for our immunity system to fight against this virus to protect our body.

### **IMPACTS OF COVID-19 ON EDUCATION AND SOCIETY:**

Due to this pandemic the whole educational system of our country is in shut down. For this reason, students who do not have their private teacher for getting education and who are fully dependent on the educational institutions for their learning purposes, they are very much suffering at this situation.

1. Students who are from poor economic background conditions they are not eligible to buy a smart phone. That is why those students are not able to attend online classes.



2. Sometimes some teachers are also not able to deliver their lectures in a proper way. Because online platform is fully different than the pen paper offline method.
3. In online teaching-learning system sometimes teachers cannot understand that how many students are present in their online classes and whether students can understand teacher's lecture in a proper way or not.
4. During this lock down period the face-to-face communication or interaction between teacher and student is not possible. That is why due to this lack of face-to-face communication students are not able to clear their confusion regarding their subject matter taught in the class.
5. In society people are not able to physically communicate with each other, they are not even able to visit one-another's home. This situation may also create a mental gap or barrier among of them.
6. During this lock down period specially the students who are belongs to science stream they are suffering a lot because though their theory classes may be conducted by online platform but it becomes highly tough for a teacher to conduct the practical classes by online mood as well as students also face difficulties to understand such practical classes by online mood.
7. Due to this **Covid-19** pandemic the educational institutions are not able to conduct their semester examinations as well as internal examination by off line mood; maximum colleges and universities are conducting their examination by online assignment method. Due to this reason teachers are not able to check the best quality of a student.
8. Due to this pandemic various social service sectors are also not able to provide their proper services.
9. Peoples are avoiding the national and international travelling and also maintaining social distancing with peer groups as well as other persons. The numbers of celebrations of cultural, religious and other festivals are also getting diminished in the society.
10. Peoples are avoiding the national and international travelling and also maintaining social distancing with nearest relatives too. The number of celebrations of cultural, religious and other festivals are also get diminished in the society.

### CONCLUSION:

From the above description it can be said that the **Case Fatality Rate** of corona virus is not very high in comparison to other viral diseases. But it is true that due to modern communication system people can easily come into contact with each other and for this reason the rate of infections is also increasing by leaps and bounds. Now to stop this outbreak of infection as per regulation we must follow the social distancing. The government has already instructed to maintain some rules and to use necessary equipment to protect ourselves. On one side people are suffering from the bad effects of this disease on the other hand it is

directly hammering on the world economy. It is affecting our day-to-day life. In this situation all our great scientists and great thinkers throughout the world who are working to find out solution of **Covid-19**, should work with full of energy and mental peace. At this moment global solidarity is very important. And whole mankind should come into a common banner to defeat this deadly virus.

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