COVID-19 Pandemic: Age and Temperature Related Effects

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Abstract: Background: Coronavirus belongs to the phylum Incertae sedis, Nidovirales order, Orthocononaviridae subfamily and spring up from the family of viruses that can cause the common cold, fever, shortness of breath, aches, chills, loss of smell, etc. Objectives: As we all know; coronavirus has affected the whole world, and many patients died due to it. As the prevalence of this disease has risen, many myths have also originated like the effect of temperature on the virus; is this virus surely killed by the effect of temperature? Is the effect of this virus is more on the old age patients? In the presented compilation, we have tried to exposed the actual reality behind these myths and also tried to find the morphological alteration of coronavirus from the other viruses.

Methods: The recent updates on this virus have been obtained from search engines like Pubmed and Google scholar, by using COVID-19, coronavirus, Pandemic corona keywords.

Results: After a huge search on the temperature effect on this disease, it was evident that there is no effect of temperature on the coronavirus. Due to the immunity factor, it showed its worst effect on old age people in many countries.

Conclusion: The structure, symptoms and incubation period of coronavirus have been described in this review article. We have summarized how the coronavirus is different from others, and the effects of temperature and old age have also been discussed.

Keywords: Coronavirus, morphology, old age patients, temperature effects, COVID-19, Pandemic.

1. INTRODUCTION

Coronavirus belongs to the phylum Incertae sedis, Nidovirales order, Orthocononaviridae subfamily and Coronaviridae family, revealing a series of spikes, a basic protein on the surface appear like a crown-shaped structure, named as the corona. It is a single-stranded, largest RNA virus having a diameter of 132nm, with flattened knob and conical shaft of 18nm in length and genomes ranging from 26-34kbs. Surface structural proteins, namely spike, envelope, membrane and nucleocapsid assist the viral entry into the cell and recognize a specific receptor (ACE-2) present in the visceral, including lungs, heart, kidney, and intestine. Nucleocapsid protein is a ribonucleoprotein and forms a complex with the RNA in viral assembly and the envelope protein forms the viral sheath having two subunits, i.e., E1 and E2; E1 is a transmembrane protein matrix and E2 is a pathogenic glycoprotein that helps infusion; this envelope is made up of fatty layers, that on contact with soap, gets shatter dow indicating the significance of handwashing to get rid of this deadly evil. The membrane protein, the central organizer for coronavirus assembly (Fig. 1) is most abundant on the viral surface and defines the shape of the viral membrane [1-2].

According to the researchers and pulmonologists, COVID-19 shares both resemblance and deviation with other coronaviruses. Coronavirus originates from the family of viruses that can cause malady such as the common cold, fever, shortness of breath, aches, chills, loss of smell, etc. Indeed, differentiating coronaviruses, dissimilar from this particularly said “SARS-CoV-2”, the virus that grounds COVID-19.

Based on structure dissimilarity observation under an electron microscope, Coronavirus exhibits a unique and distinguishable appearance. 'Corona' term came up from the word crown, due to its crown-like anatomical structure. As they have the property to adhere to the surface with the help of protein present on it, thus comes under the class of 'enveloped' viruses, and this same layer of protein can be ruptured by disinfectant while others viruses like influenza, ebola virus, swine flu and MERS possess two basic components named nucleic acid genome and a protein capsid that covers the genome.

The Communicable factor of SARS-CoV-2 is more transmittable than other viruses. The researcher states that COVID-19 is probably more transmittable in comparison to viruses that cause swine flu and influenza because it is completely new for the human immune system. Furthermore, human mental states and immune systems are not ready to
deal with it leading to more cellular damage and the production of more mast cells. COVID-19 is more fatal for people having immunity disorders, because of certain medications and ageing.

1.1. Symptoms of Coronavirus and Other Viruses

Coronavirus differs in symptoms from other viruses, including behavioural incubation revealing its novelty and mutation aspects, making it fatal enough and are not curable [3]. Comparative symptoms of coronavirus with other viruses and differences in behaviour and incubation period of coronavirus with different viruses are given in Table 1 and 2.

2. EFFECT OF CORONAVIRUS ON OLD AGE PEOPLE

In recent weeks, the overall number of patients with 2019 novel crown infection malady (COVID-19) and the quantity of related passing has been expanding. Mortality rate brought about by COVID-19 was more in the old grown-ups. China has the biggest maturing population comprehensively. The mean old grown-ups were 241 million of every 2017 (>60 years) across the country, representing 17.3% of the all-out populace, of whom around half were those old ones who are without kids, or whose kids ventured out from home and worked somewhere else or say with minimal social help. Therefore, they have less source to overcome or to deal with it physically, mentally and socially. More than 30 million individuals were more than 80 years, and above 40 million required long haul minds to deal with it because of such incapacities. Psychological wellness issues are regular in aged Chinese grown-ups (i.e., ≥55 years). The quick transmission of the extreme intense respiratory disorder COVID infection 2 (SARS-CoV-2) and high passing rate could intensify the danger of psychological wellness issues and compound existing mental indications, further weakening their day by day working and discernment. Even the second most affected country had additionally given the reports on how mature age is severely impacted by the COVID-19 and other with heart, lungs, and immunological conditions.

Italy is the country with the most infected world’s oldest population with corona, as shown in Fig. 4. An analysis by the national health institute found that old age is more prone to it. It increases day by day as the number of confirmed patients are 72314+ in late February and found a huge effect on old age people. In short, the disease appears to be deadlier in people with 60 plus age.

We are still unaware of many things related to coronavirus. Why is it so transmittable? As shown in Fig. (4), old age people are at the highest risk of dying from coronavirus. It can be concluded from Fig. 4 that more than 50 per cent of patients are of age above 60 or older than that died from this coronavirus.

According to the doctor in Wuhan, China in the School of Public Health, Tongji Medical College, Huazhong University of Science and Technology (HUST), patients who got ARDS were bound to be more prone to have coronavirus and are also prone to different sicknesses like diabetes, coronary illness, and kidney malady. However, even among older patients who seems to get a genuine instance of COVID-19 infection are at high risk of death. None of these patients passed on from pneumonia, nonetheless. The assumed reason for death was the coronavirus. All of the patients who kicked the bucket had genuine COVID infection side effects, for example, trouble breathing, and all should have been admitted to escalated care units.

In another report surveying 1,590 research facility affirmed hospitalized patients in China with COVID-19 from November 21st 2019 to January 31st, 2020, a quarter were found to have comorbidities, for example, hypertension, diabetes, hepatitis B contaminations, lung ailment, cerebrovascular illness and others. Patients with COVID-19 and comorbidities had more unfortunate results. It was evident that young people have faced more mass gatherings as compared to the other age groups. But At the same time those were found safe in comparison to other individuals due to margins of immunity responses. It was also found in survey that the hospitalised patients were belongings to old age group or bearing some other pathological manifestations or ailments.
Therefore, specialists are suggesting forceful safety measures for older. Dr Abraar Karan prompted that sound babies, youngsters and youthful grow-ups should remain at home since they are probably not going to require a medical clinic level of care; visiting the crisis room would pointlessly uncover other people who are progressively defenseless. The CDC telebriefing update on March third suggested that people age 65 or more established consider what moves you can make to diminish your presentation. One case of this is social separating. For example, constraining up close and personal contact to forestall COVID-19 spread in networks. It was a stressed, capable time over our older friends and family," said Nava Bak MD, a crisis medication doctor at Hackensack Meridian Health and a mother and essential to our children to be the minister of safety for the more famous network. By expanding their work at great hand cleanliness and covering their mouth on hacking, they can help keep this infection from spreading" [8]. The bar graph in Fig. 2 sees the percentage of old age people infected with the coronavirus in different countries [8, 9].

Nonetheless, one has the danger of contracting COVID-19 on the off chance that one comes in close contact with an individual who is influenced by it. On the off chance that you have influenza manifestations, you should be careful and, in any case, additionally, if you play it safe, you will be protected,”

3. WILL WARM WEATHER KILL CORONAVIRUS?

This pandemic is not with the hope of people that this outbreak of coronavirus will wane away with high temperatures. As the winter season arrives, flues are on high levels, such as norovirus vomiting bug. However, some like typhoid

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Fig. (2). Coronavirus: Infected old age people in different countries. (A higher resolution / colour version of this figure is available in the electronic copy of the article).

The overall study can be concluded that COVID-19 has no relation with temperature in several cases. The number of cases continued to increase in India, whether the temperature would rise or went down. Moreover, the same impact can be seen in other countries such as Saudi Arabia, Mexico, Ethiopia, Sudan and Iraq. Therefore, it can be seen that COVID-19 has not to get changed with the change in season; it mainly depends on the country’s situation and also depends upon the people who follow the guidelines and not and do they maintain the social distance in the phase of the disease. All this is shown graphically in Figs. (3 to 8) [13].

We can not ignore the fact that the network of the disease is confusing and spreading in a disassembled manner. Specialists have also warned that the spreading patterns of SARS-CoV-2 as well as pathophysiological is different from other influenza infections, and it also can not be claimed that the spread will decrease in spring and summer months.

"In any case, increase in the temperature does not mean this will help execute the infection," it stated, taking note of that nations like Iraq, which has a hot and muggy atmosphere, additionally face the danger of coronavirus [14].

CONCLUSION

The structure, symptoms, and incubation period of coronavirus have been discussed in this review article. It gives complete information about the proteins present on the surface of the virus and how they help the virus to enter into the body. The aspects that make the coronavirus more contagious then other viruses are discussed in it. In addition, how the coronavirus could affect an old age people is analyzed among different countries. And the best thing is to conclude the question that will warm weather affects COVID-19" after reading this paper.

take its shape as the temperature rises. On the other side, measles cases went down during the same. Therefore people are having questions in their minds whether COVID-19, similar to other seasonal diseases.

There is no firm data available to the question about COVID-19 which is officially named SARS-CoV-2 that weather it will change with a rise in temperature. Even there is little information available about the SARS virus, which was spread in 2003 that it gets impacted with seasonal change [10, 11].

Other coronaviruses provide the clue that Covid-19 might eventually become seasonal. But point to be noted is that temperature alone is not enough to cope up with it and that appears like an oily coat, which shows spikes like structure are the basic reason behind their name.

Some studies show the impact of weather on Covid-19. Researchers have seen that other enveloped viruses that are having oily coat enable the viruses more resistible towards temperature as compared to those that do not have. The colder conditions allow the oily coat to harden into a rubber-like structure with which the virus survives longer, outside the body.

Research shows that SARS-CoV-2 can stay alive for up to 72 hours on plastic and stainless steel at temperatures of around 21-23°C with a relative humidity of 40%. The relation of Covid-19 with temperatures and humidity is still under testing [12, 13].

3.1. Effect of Temperature on COVID-19

The effect of temperature on the number of cases in different countries on Covid-19 from 8th to 30th April 2020 has been given in Table 3.
## Table 3. Reported data for cases v/s temperature from 8th to 30th April 2020 in different countries.

<table>
<thead>
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<th>Country Name</th>
<th>Total cases on a particular date (April 2020)</th>
<th>Temperature detail on a particular date (April 2020)</th>
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<td>9</td>
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Fig. (3). Graph showing case v/s temperature from 8th to 30th April, 2020 in Iraq. (A higher resolution/colour version of this figure is available in the electronic copy of the article).

Fig. (4). Graph showing case v/s temperature from 8th to 30th April, 2020 in India. (A higher resolution/colour version of this figure is available in the electronic copy of the article).
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**Fig. (5).** Graph showing case v/s temperature from 8th to 30th April, 2020 in Mexico. (A higher resolution/colour version of this figure is available in the electronic copy of the article).

**Fig. (6).** Graph showing case v/s temperature from 8th to 30th April 2020 in Ethiopia. (A higher resolution/colour version of this figure is available in the electronic copy of the article).
Fig. (7). Graph showing case v/s temperature from 8th to 30th April, 2020 in Arabia. (A higher resolution/colour version of this figure is available in the electronic copy of the article).

Fig. (8). Graph showing case v/s temperature from 8th to 30th April 2020 in Sudan. (A higher resolution/colour version of this figure is available in the electronic copy of the article).
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CONFLICT OF INTEREST
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REFERENCES