

ENVIRONMENTAL POLLUTION AND SOLUTION

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Environmental Pollution and solution

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Chapter 11

COVID-19 AND HEALTH CHALLENGES DURING THE PANDEMIC

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Introduction

The word Coronavirus (CoV) is derived from 'corona' meaning in Latin 'crown'. Which causes human respiratory tract infections. The present COVID 19 disease also called as severe acute respiratory syndrome (SARS)-CoV-2 is an emerging global health threat. The global outbreak of the COVID-19 pandemic has spread worldwide, affecting almost all countries. The outbreak was first observed in December 2019 in Wuhan, China. The public care strategies have included hand washing, wearing face masks, physical distancing, and avoiding mass gathering and assemblies. Lockdown and staying home strategies have been put in place as the needed action to flatten the curve and control the transmission of the disease.

Objectives

To overview on coronavirus and its symptoms.
To study coronavirus and its impact on human health and Society, Environment.

Methods

A literature search using Google and Google Scholar, PubMed. Also data available on internet published by Government of India. and articles from several non-academic sources (e.g. news websites etc.) were accessed.

Covid-19: Corona Virus

The Corona virus has posed frequent challenges during its course ranging from virus isolation, detection, prevention to vaccine development. Corona virus belongs to the order Environmental Pollution and Solution

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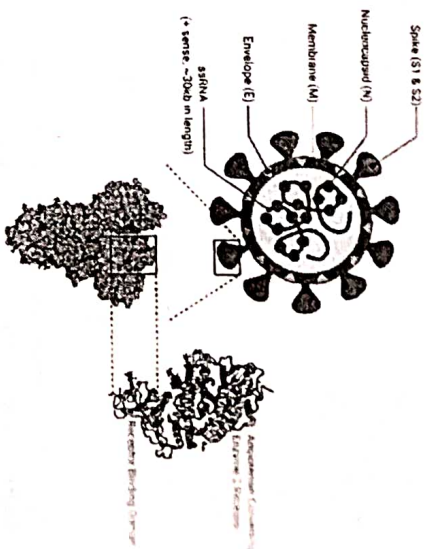
Nidovirales and has the largest RNA genome. It is known to be acquired from a zoonotic source and typically spreads through contact and droplet transmission. The infected person presents with non-specific clinical features requiring virological detection and confirmation by molecular techniques.

Corona virus are enveloped, positive single-stranded large RNA viruses that infect humans, but also a wide range of animals. Coronaviruses were first described in from patients with common colds. Based on their morphology as spherical variants with a core shell and surface projections resembling a solar corona, they were termed. Four subfamilies, namely alpha-, beta-, gamma- and delta corona viruses exist. While alpha- and beta-coronaviruses apparently originate from mammals, in particular from bats, gamma- and delta-viruses originate from pigs and birds. The genome size varies between 26 kb and 32 kb. Among the seven subtypes of coronaviruses that can infect humans, the beta-coronaviruses may cause severe disease and fatalities, whereas alpha-coronaviruses cause asymptomatic or mildly symptomatic infections. SARS-CoV-2 belongs to the B lineage of the beta-coronaviruses and is closely related to the SARS-CoV virus. SARS-CoV-2 is 96% identical at the whole-genome level to a bat coronavirus.

SARS-CoV-2 apparently succeeded in making its transition from animals to humans on the seafood market in Wuhan, China. However, endeavours to identify potential intermediate hosts seem to have been neglected in Wuhan and the exact route of transmission urgently needs to be clarified. Viral structure The CoV are enveloped positive single-stranded RNA viruses having the largest known viral RNA genomes of 8.4–12 kDa in size. The viral genomes are made up of 5' and 3' terminal. The 5' terminal constitutes a major part of the genome and contains open reading frames, which encodes proteins responsible for viral replication. The 3' terminal contains the five structural proteins, namely the spike protein (S), membrane protein (M), nucleocapsid protein (N), envelope protein (E) and the haemagglutinin-esterase (HE) protein. The S protein mediates an attachment and fusion between the virus and host cell membrane and also between the infected and adjacent uninfected cells. They are the major inducers for neutralising antibodies in a vaccine. The N protein forms RNA complexes that aid in virus transcription and assembly. The M protein is the most abundant structural protein and also defines the viral envelope shape. The E protein is the most enigmatic and the smallest of the major structural protein, which is highly expressed within the infected cell during viral replication cycle. The HE protein is responsible for receptor binding and host specificity. Although research on this virus carried by various health agencies in the world. Hopefully world can take safe breath in early days.



SARS-CoV 2 Structure



Covid-19: Symptoms

Corona virus has affected day to day life and is slowing the global economy. The peoples, who are either sick or are being killed due to infection of this disease. The common symptoms of this viral infection are fever, cold, cough, bone pain and breathing problems, and ultimately leading to pneumonia.

Covid-19: Vaccine

In the world leading country develops the vaccine against corona virus like Pfizer, AstraZeneca etc. In India Serum Institution of India Pvt. Ltd develop Covishield and Bharat Biotech Ltd develop Covaxine vaccine. In the course of development of vaccine, the virus changes its Phases and potential ability of infection. In India as vaccination started the second wave of corona virus is to be started named as Delta corona virus. In the course of second wave of corona virus the continuously vaccination is carried out the first and second dose of vaccine is successfully given to the people. Result of vaccinated people against the corona virus are very satisfactory. In end of 2021 and early of 2022 the third wave of corona virus started in India named as Omicron corona virus. The spreading ability of this phase is very rapid and number of people are infected by this virus but as compare to previous phases of covid-19 virus

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this virus is not much deadly. Now at least two doses of vaccine are much preventive against the corona virus.

In the development of vaccine world faces lot of challenges. In India the raw material for development of vaccine is one of the problems but institutions for development of this vaccine available so that progress of development of vaccine carried out by continuously. These institutions are play major role in the development of vaccine in India.

Due to lockdown in the world, there are difficulty in the availability of raw material for vaccine development also there are challenges for transformation and storage of vaccine. All these major problems overcome by Indian government and the Public Health workers and doctors.

Covid-19: Medication

When pandemic announced Doctors and health experts faces challenges about medications against corona virus. The symptoms are mild to severe so that on early hydroxychloroquin, azithromycin antibiotics were used for treatment of covid-19 patients. On course of treatment hydroxychloroquin are reported not effective against covid-19. Ivermectin also used to treat covid-19. The major role played by Remdesivir in phase first and in during phase second but it is also reported by WHO which is not control the action of COVID-19. And WHO advise to stop use of Remdesivir. After many studies reported that the use of Remdesivir responsible for the post covid diseases. The plasma treatment reported to beneficial for some extent. Lack of correct medication and fear about covid-19 responsible for the increase in death rate. Although peoples take home remedies like vaporization, yoga, concentrate on diet and exercise which are helpful to reduce risk of infection from corona virus.

Covid-19: Challenges within the families

At the family level, the pandemic has led to a re-organization of everyday life. All family members have stress of quarantine and social distancing. School shutdowns have led to home-schooling and potential postponement of exams. Parents have experienced increased pressure to work from home, to keep jobs and businesses running as well as to take care of schooling children at home at the same time, while care about their grandparents and the wider family have been restricted. Family connections and support may be disrupted. Fear of losing family members who belong to a risk group can increase. In case of death, the pandemic disrupts the normal families. There is adjustment problems, post-traumatic stress disorder, depression and even suicide of both, adults and young people. The impact on mental health has

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been enormous. Anxiety, fear, uncertainty and fear of dying have all increased. Some population groups have been hit harder than others. Lockdowns and school closures have isolated persons and groups, families have been split and there are reports of increased partner violence. While highly educated, well of groups have been able to cope with the pandemic, even benefiting from home work others have suffered unemployment or lack of support and company.

Covid-19: Environment

One positive outcome of the pandemic is the reduction of environmental pollution especially air pollution. The pandemic also showed the importance of reducing air pollution as it has an effect on the spreading of the virus. In the future, environmental policies should be included everywhere to reduce air pollution and develop new urban planning interventions.

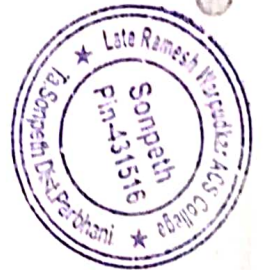
Conclusion

As we seen from last two years about human health facilities we must concentrate on our public health facilities, services and research. Its very urgent need has to restructure our public health policies, our day-to-day exercises. Also, we need to focus on our environmental issues, disturbance in environment due to pollution which leads to climate change. Increasing the research on health, agriculture which ensure normal people's life in future.



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