

Effect of Covid-19 on Different Countries: A Comprehensive Review

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ABSTRACT

Coronavirus disease 2019 (COVID-19) was first distinguished in China in December 2019 and proclaimed as a pandemic by the World Health Organization (WHO) on March 11, 2020. The clinical qualities of the sickness range from asymptomatic cases or gentle manifestations, which incorporate vague indications like fever, headache, sore throat, cerebral pain, and nasal clog to extreme cases like pneumonia, respiratory failure requesting mechanical ventilation to multi-organ failure, sepsis, and death. Scientists have detailed that the infection is continually advancing and spreading through asymptomatic transporters, further recommending a high worldwide global threat. Keeping up with hand-cleanliness, social distancing, and individual defensive hardware (i.e., covers) stay the best safeguards. Patient administration incorporates steady consideration and anti-coagulated measures, with an emphasis on keeping up with respiratory capacity. Treatment with Dexamethasone, Remdesivir, and Tocilizumab seem, by all accounts, to be generally encouraging. In this review, we have discussed the effect of covid-19 in different countries during the first wave and second wave, the positivity rate, and the mortality rate. We have also discussed the covid-19 pandemic effect on the unemployment and education system, the medications, and treatment during the first wave and second wave. The review also focuses on the recent threat of fungal disease, Mucormycosis.

KEYWORDS: Coronavirus, World Health Organization, pneumonia, mucormycosis, pandemic, social distancing, unemployment, medications, treatment.

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INTRODUCTION

In Wuhan, Hubei Province, China, a new coronavirus, now known as SARS-CoV-2, produced a series of acute atypical respiratory illnesses in December 2019. The virus is human-to-human transmissible and has produced a worldwide pandemic. The number of deaths continues to increase, and several governments have indeed been obliged to implement social separation and lockdown measures. The lack of specialized therapy remains an issue (Yuki et al., 2020).

SARS-CoV-2 is a highly infectious virus that spreads globally in a short amount of time, prompting the World

Health Organization to proclaim a global pandemic on March 11, 2020. WHO reported more over 2.1 million confirmed cases of COVID-19 as of April 18, 2020, with 1, 42,229 fatalities in 213 countries, regions, or territories?

The United States of America, Spain, India, Italy, Germany, France, the United Kingdom, China, Iran, Turkey, Belgium, Russia, Canada, and Brazil are the nations most afflicted by SARS-CoV-2. However, the number of cases continues to climb over the world, posing a severe public health threat.

Many low-income nations have taken action while the transmission is still low, which is believed to have

Effect of Covid-19 on Different Countries: A Comprehensive Review

significantly reduced the virus's spread. Without a vaccine, all governments will be forced to make difficult decisions on intervention measures for the foreseeable future. The still-relevant alternative of a mostly unabated epidemic, on the other hand, clearly underscores the need for swift, decisive, and coordinated action in saving lives throughout the world (Hamlet et al., 2020).

The (Varma et al., 2021) study contributes to the growing body of data suggesting a global decrease in mental health during the pandemic, independent of the number of localized COVID-19 cases. Younger age groups may be more sensitive to the pandemic's mental health effects.

The study of (Wu et al., 2020) gave early evidence that increasing warmth and humidity can help to decrease the COVID-19 pandemic. COVID-19 must, however, be controlled at the site of infection, transmitted, and prevented from spreading further.

A coordinated effort led by a responsible administration, well-executed strategies, and responsive people might help restrict the COVID-19 pandemic. Close monitoring of prediction models of such variables in the most afflicted nations would aid in assessing the potential for fatalities (Patel et al., 2020).

FIRST WAVE

World health organization (WHO) announced that coronavirus disease (COVID-19) was first reported from Wuhan, China, on 31st December 2019.

CHINA

China was one of the first countries to identify the disease and its pathogen, as well as the first to take harsh measures in reaction to the epidemic (such as lockdowns and face mask regulations) and to bring the outbreak under control. The pandemic began with a cluster of mystery pneumonia cases in Wuhan, Hubei province's capital, largely linked to the Human Seafood Market. The epidemic was originally reported to the local authorities on December 27th, and the results were released on December 31st. Chinese scientists recognized a novel coronavirus (SARS-CoV-2) as the source of pneumonia on January 8, 2020, despite their censoring of related material during the first outbreak, particularly during local legislative sessions. As a huge number of Chinese people came home for the Chinese New Year break from and through Wuhan, a key transportation hub, the illness spread quickly. However, around the 23rd of January 2020, strict measures such as the lockdown of Wuhan and the surrounding Hubei province, as well as face

As of 14th July 2020, there are 83,545 cases confirmed in China excluding 114 asymptomatic cases, 62 of which were imported, under medical observation; asymptomatic cases have not been reported before 31st March 2020 with 4,634

mask regulations, were implemented, greatly lowering and delaying the epidemic peak, according to epidemiological modeling. Despite this, the virus has spread to all provinces of mainland China by January 29, 2020. All provinces had undertaken high-level public health emergency responses by the same day.

Many inter-provincial bus and railway services have been halted. The World Health Organization labeled the outbreak a Public Health Emergency of International Concern on January 31, 2020. Several nations sent foreign help, including medical supplies, due to a serious scarcity of face masks and other protective gear.

For the first time on February 25, 2020, the number of newly confirmed cases outside mainland China surpassed those reported from within the nation; the WHO believed that the country's efforts avoided a considerable number of cases. By the 6th of March 2020, the reported number of new cases per day in the United States had reduced to less than 100, compared to thousands per day at the height of the epidemic. Although the general epidemic in China is showing signs of abating, the number of persons diagnosed with the disease is still rising and has not yet peaked. To isolate the source of infection, eliminate transmission routes, speed diagnosis, and treatment of suspected cases, and actively research and take measures to deal with the risks of infection and transmission that may result from the scheduled return to work and school, comprehensive surveillance remains critical (Shi et al., 2020). Number of cases (blue) and several deaths (red) on a logarithmic scale were represented in fig. 1.

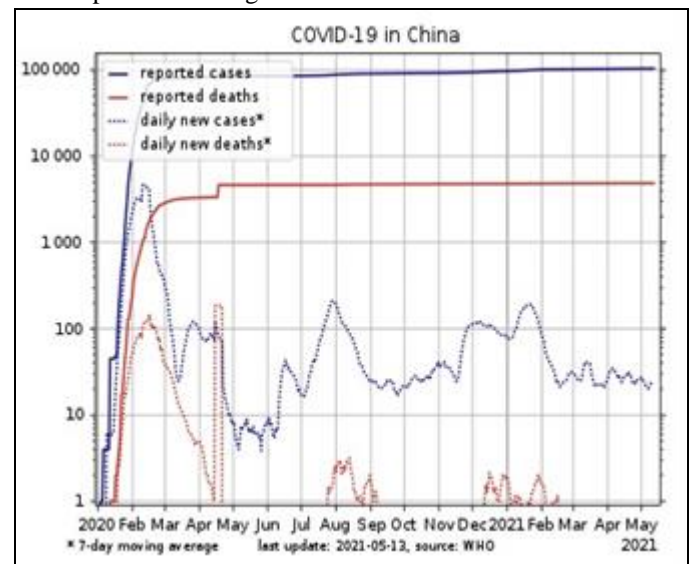


Fig. 1 Number of cases (blue) and several deaths (red) on a logarithmic scale.

deaths and 78,509 recoveries, meaning there are only 402 cases. Pandemic impact on manufacturing in China showing in fig.2.

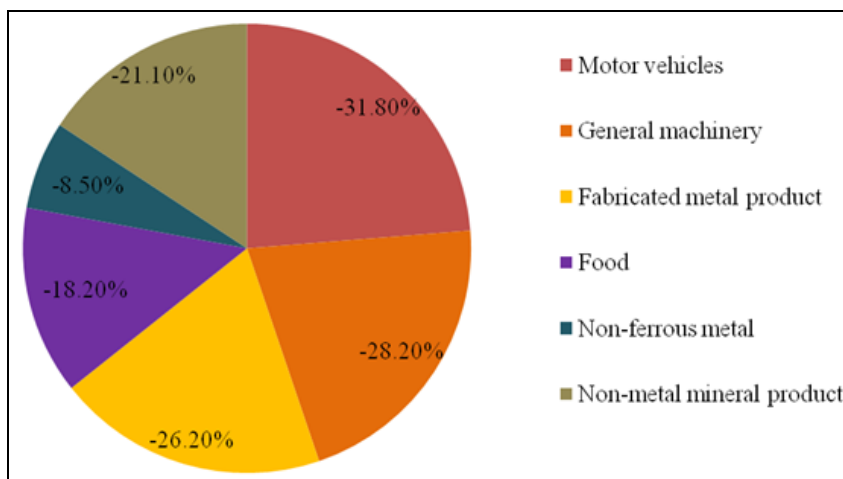


Fig. 2 Pandemic impact on manufacturing in China

NORTH AMERICA

The first cases of the COVID-19 pandemic of coronavirus disease 2019 in North America were reported in the United States in January 2020. Cases were reported in all North American countries after Saint Kitts and Nevis confirmed a case on 25th March and in all North American territories after Bonaire confirmed a case on 16 April. On 26th March 2020, the U.S. became the country with the highest number of confirmed COVID-19 infections, with over 82,000 cases. On 11th April 2020, the U.S. became the country with the highest official death toll for COVID-19, with over 20,000 deaths. As of 21st November 2020, the total cases of COVID-19 are over 13,942,964 with over 383,084 total deaths.

SOUTH AMERICA

The COVID-19 pandemic was confirmed to have reached South America on 26th February 2020 when Brazil confirmed a case in Sao Paulo. By 3rd April, all countries and territories in South America had recorded at least one case. On 13th May, it was reported that Latin America and the Caribbean had reported over 400,000 cases of COVID-19 infection with, 23,091 deaths. On 22nd May, citing the rapid increase of infections in Brazil the World Health Organization declared South America the epicenter of the pandemic.

UNITED KINGDOM

In late January 2020, the virus spread to the United Kingdom. As of March 24, 2021, there had been 4.4 million reported cases and 1,27,543 deaths overall among persons who had later tested positive - the fifteenth highest mortality rate by population in the world and the greatest death count in Europe. As of April 16, 2021, there had been 152,704 deaths with COVID on the death certificate. There has been some variation in the severity of the epidemic in each of the four nations.

The United Kingdom was placed on lockdown on March 23, 2020. The government issued a stay-at-home order that prohibited all non-essential movement and interaction with others, as well as the closure of nearly all institutions, offices, and meeting places. Those with signs, as well as their families, were advised to segregate themselves, while those with specific conditions were advised to protect themselves.

The United Kingdom was the very first country to approve and implement a mass immunization campaign using the Pfizer–Bio N Tech COVID-19 vaccine. The United Kingdom has one of the greatest immunization rates in the world, and the largest in Europe, by early 2021. Percent of death rate in Europe showed in Fig.3.

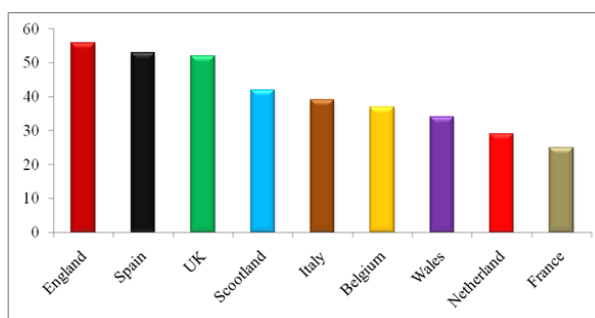


Fig.3 Percent of death rate in Europe

Effect of Covid-19 on Different Countries: A Comprehensive Review

RUSSIA

On January 31, 2020, the virus was verified to have expanded to Russia after two Chinese people in Tyumen (Siberia) and Chita (Russian Far East) tested positive for the virus. The great majority of federal subjects, including Moscow, had enforced lockdowns by the end of March 2020. Cases have been confirmed in all federal subjects by April 17, 2020. The number of positive SARS-CoV-2 tests surpassed one million on September 1, 2020.

After the United States, India, Brazil, France, and Turkey,

Russia has the sixth-highest number of confirmed cases in the world. As per information from the national coronavirus crisis Centre, Russia has done approximately 133.5 million tests as of May 16, 2021. Between April and November 2020, 1, 14, 268 persons with COVID-19 died, according to precise statistics given by the Federal State Statistics Service (Rosstat). During the same period, however, over 3,00,000 extra deaths were reported, implying that the official tally grossly underestimated the true number of deaths showing in fig. 4

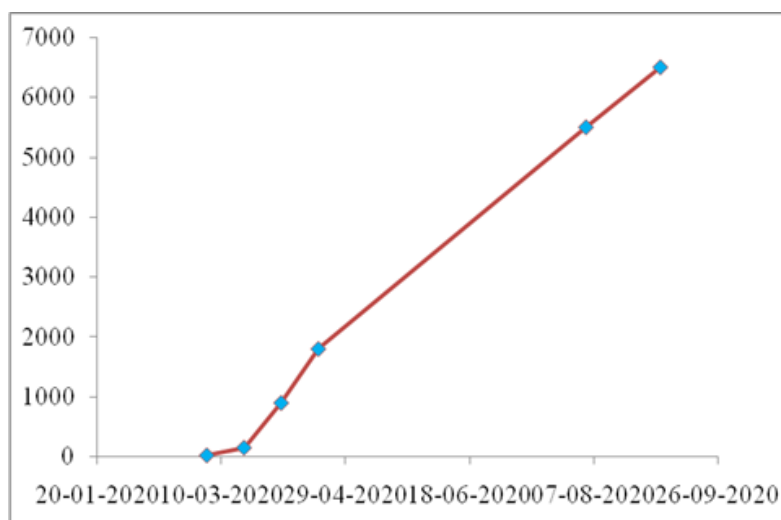


Fig. 4 Corona cases in Russia

AFRICA

The COVID-19 pandemic is a wake-up call for Africa. The continent's high burden of infectious illnesses, inadequate healthcare systems, poverty, and the onset of the winter "flu" period in Southern Africa are just a few of the primary elements that make it particularly vulnerable to this present epidemic (Lone & Ahmad, 2020). On February 14, 2020, the COVID-19 pandemic was found to have expanded to Africa, with the first confirmed case in Egypt. Nigeria declared the first confirmed case in Sub-Saharan Africa at the end of February. The virus has swept throughout the continent in three months, with Lesotho, the last African sovereign state to be free of the virus, reporting a case on May 13th. Although testing capacity was limited, it seemed that most African nations were experiencing community transmission by May 26.

In December 2020, new strains of the virus were discovered in South Africa and Nigeria, in addition to the Lineage B.1.1.7 variety discovered in the UK in September. Africa has reached 2,00,000 cases by the second week of June. In

June, the number of confirmed new cases increased, with the continent recording the first 1, 00, 000 cases in 98 days and the second 1, 00,000 in 18 days. On July 6th, the rate of increase increased, with cases reaching the 3,00,000 and 4,00,000 milestones. On July 8, 2020, the number of cases had surpassed half a million. South Africa and Egypt account for half of the continent's 5, 00,000 cases and the number exceeded to a million by 6th August.

ANTARCTICA

Antarctica was the last continent to receive verified instances of COVID-19 because to its remoteness and small population. The first cases were reported in December 2020, over a year after COVID-19 was initially discovered in China. At least 36 persons have been confirmed as sick. Human activities in Antarctica were indirectly influenced even before the first instances on the continent were identified. In April 2020, about 60% of passengers on a cruise ship bound for Antarctica tested positive for COVID-19. Covid 19 cases in Antarctica was shown in fig. 5

Effect of Covid-19 on Different Countries: A Comprehensive Review

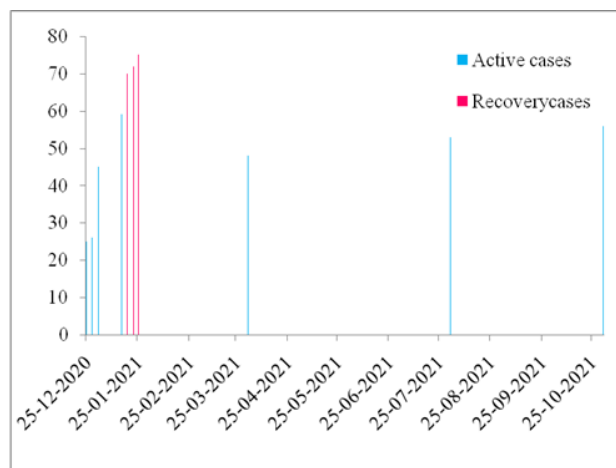


Fig.5. Covid 19 cases in Antarctica

ASIA

Except for North Korea and Turkmenistan, every nation in Asia had at least one case of COVID-19 as of 30th April 2020. India, Turkey, Iran, and Indonesia are the Asian nations with the largest number of confirmed coronavirus infections, excluding Russia (a transcontinental country). Despite being the first region of the globe to be affected by the pandemic, several Asian countries, including Bhutan, Singapore, Taiwan, and Vietnam, have fared rather well because to their quick and widespread reaction.

India: In Asia, India now has the highest number of confirmed cases. With approximately 24 million confirmed instances of COVID-19 infection and 2, 62,317 deaths as of May 2021 (second only to the United States), India has the world's second-highest number of confirmed cases (behind the United States).

Three Indian medical students who had returned from Wuhan reported the first instances of COVID-19 in India in the towns of Trissur, Alappuzha, and Kasaragod, all in the state of Kerala. Mumbai, Delhi, Ahmadabad, Chennai, and Thane accounted for over half of all recorded cases in the country by mid-May 2020. For the first time on June 10th, India's recoveries surpassed active cases.

Daily instances peaked in mid-September at over 90,000 per day, before decreasing to around 15,000 in January 2021. On the 16th of January, India officially inaugurated its immunization campaign, with health care professionals receiving the vaccine first. On the first day, about 1, 60,000

dosages were given out. Around 181.2 million pills had been provided by the 15th of May, with 40.2 million persons receiving two doses. On April 5, India gave around 4.3 million doses, setting a new world record for daily immunizations. The country began vaccinations for inhabitants aged 18 to 44 on May 1st, 2021. Due to a shortfall of vaccine supply, several states were unable to commence immunization on the scheduled date.

MEDICATIONS USED IN FIRST WAVE

In people hospitalized with Covid-19 and signs of a lower respiratory tract infection, Remdesivir was shown to be superior to placebo in reducing the duration to recovery (Beigel et al., 2020). Other medicines such as Dexamethasone, Convalescent plasma, Monoclonal antibodies (MABs), Bamlanivimab (LY-CoV555), Bamlanivimab, and etesevimab, Casirivimab and imdevimab (REGN-COV2), Hydroxychloroquine and chloroquine, Azithromycin, Tocilizumab (Actemra), and other IL-6 inhibitors, Interferons, and Ivermectin were used. Tests such as PCR test and Antigen test were performed. Fig.6 and Fig.7 showing the side effects of commonly used drugs in the treatment of covid and prescription rate of hydroxyl chloroquine drug by different countries respectively.

Effect of Covid-19 on Different Countries: A Comprehensive Review

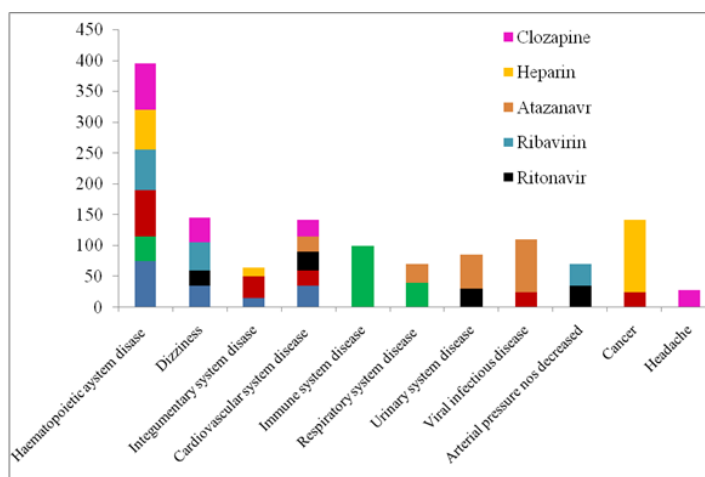


Fig.6. Side effects of commonly used drugs in the treatment of covid

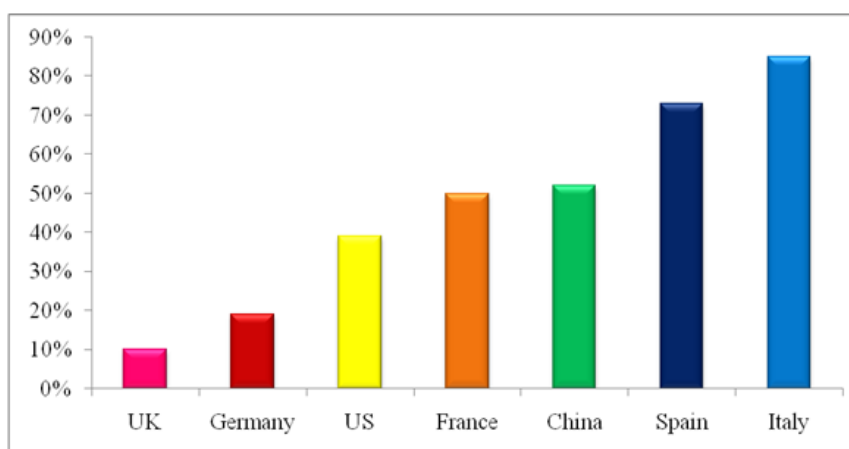


Fig.7. Prescription rate of hydroxyl chloroquine drug by different countries

SECOND WAVE

A second-wave pandemic is a real threat to civilization, with a huge toll in terms of human lives and terrible economic consequences. Countries who are considering reducing the strict preventative measures should take a close look at the overall situation, not only in their nation but throughout the world. In this regard, scientists such as epidemiologists (to study the COVID-19's characteristics) and medical anthropologists should be enlisted to conduct a thorough analysis of the situation and develop comprehensive plans to deal with the virus (Ali, 2020).

The second wave of COVID-19 is wreaking havoc around the globe. In India, where the daily count on April 15, 2021, is already double that of the previous peak, the situation is quite bleak.

The viral mutation is another reason that can cause new outbreaks in those who have already been infected. The SARS-COV2 virus has undergone considerable changes, with certain mutant strains exhibiting increased infectivity. India has revealed that a double mutant strain is responsible for up to 20% of new cases. In India, the UK, and South Africa variations do not appear to have had a significant symptoms, Headaches. Fig.8 showing the Countries with the most COVID-19 Cases.

impact.

More than 8,000 instances of the B.1.1.7 strain had been recorded across 51 jurisdictions as of March 27. By April 1st, the number had risen to almost 11,000, with the majority of cases occurring in Florida and Michigan. By April 7th, the B.1.1.7 variant had overtaken the COVID-19 strain as the most common in the United States. The first cases of a novel "double mutant" SARS-CoV-2 strain from India (B.1.617) were detected in California on April 12.

NEW SYMPTOMS

While some nations are still coping with COVID-19's initial wave, others are already grappling with the second wave. According to recent reports, Europe has also been hit by the third wave of COVID-19. The virus's ongoing spread has resulted in the appearance of new symptoms. The new varieties, the UK variant and the double variant, are spreading faster than anybody could have predicted, resulting in a wide range of symptoms. These variations are highly contagious and pose the same amount of danger to persons of all ages. The new symptoms identify are - Low-grade fever, Dry mouth, Non-salivation, Gastrointestinal

Effect of Covid-19 on Different Countries: A Comprehensive Review

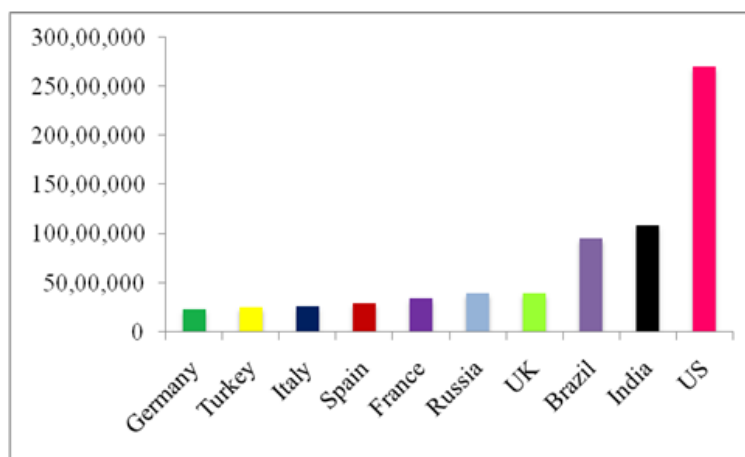


Fig.8. The Countries with the most COVID-19 Cases

CHINA

Chinese mainland reports 1,383 new locally transmitted COVID-19 cases in April 2022 by the National Health Commission. In these local cases reported 973 were in Jilin, 311 in Shanghai, and 17 in Zhejiang. Besides, a total of 32 new imported COVID-19 cases were reported across the mainland, Xinhua News Agency reported. And also reported

19,199 new asymptomatic cases on the Chinese mainland, including 19,089 local ones and 110 imported ones, said by the commission. Among the asymptomatic cases, 16,766 were reported in Shanghai and 1,798 in Jilin. Fig.9 showing the number of locally transmitted cases on the Chinese mainland.

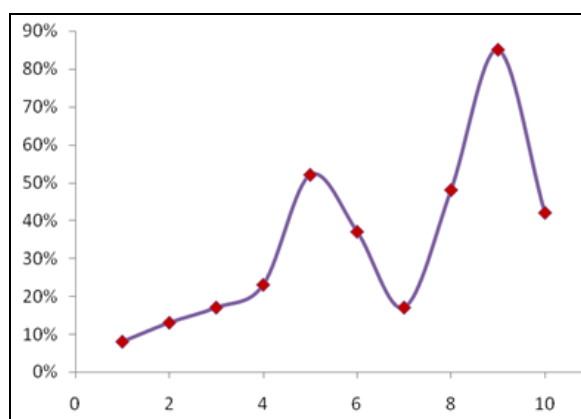


Fig.9. Number of locally transmitted cases on the Chinese mainland

INDIA

The second wave of the coronavirus epidemic afflicted the whole country. Every day, almost 4 lakh instances are recorded in the country, combined with a lack of beds and oxygen, making the situation very severe.

It was critical to be vaccinated to avoid contracting the coronavirus illness. Almost every state in India has an effective reproduction number greater than 1, suggesting the presence of the second wave. The infection rate is substantially larger than the previous wave, but the case fatality rate is lower, according to an exponential fit of current data. According to preliminary projections using the SIR model, the second wave will peak in mid-May 2021, with a daily count reaching 0.35 million.

One of the main reasons for the rise in fatalities among people who appear to be well enough to recover from SARS-CoV-2 infection is that they are more susceptible to the effects of cytokine storms. As a result, we believe that, in addition to focusing research on medications and

vaccinations to combat the present epidemic, prediction models will be critical to our understanding of why certain people are more susceptible to developing a cytokine storm (Asrani et al., 2021).

SOUTH KOREA

The government has been relatively effective in dealing with COVID-19, but it anticipates the epidemic to last for months in the second wave. Despite relatively modest numbers, health experts in South Korea fear the country is seeing a second wave of coronavirus. New cases rose in early May, just as Korea stated it would relax social distancing requirements, owing in part to infections among young people who attended nightclubs and bars in Seoul over the holiday weekend. The second wave has hit the eastern countries the hardest.

EUROPE

The (Bontempi, 2020) study backs up findings that the

Effect of Covid-19 on Different Countries: A Comprehensive Review

inability to stop the global spread of the COVID-19 pandemic can be linked in part to the underappreciated role of airborne viral transmission via aerosols, with the resulting lack of focus on safety conditions. There are various examples of ineffective political management tactics, which frequently occur during the start of a virus's propagation. At its maximum in March, April, and May, Europe recorded between 35,000 and 38,000 Covid-19 cases every day. In Europe, however, there has been a sharp increase in

instances. In Europe, the second wave of infections is significantly worse than the first. In a single day, Europe recorded more than 2.5 lakh cases. The United States, which has followed a substantially different path than Europe, is currently seeing a second wave. The number of daily new cases has now surpassed 88,000 in this wave. Both Fig. 10 & table 1 showing the mortality rates and fig. 11 showing positivity rates.

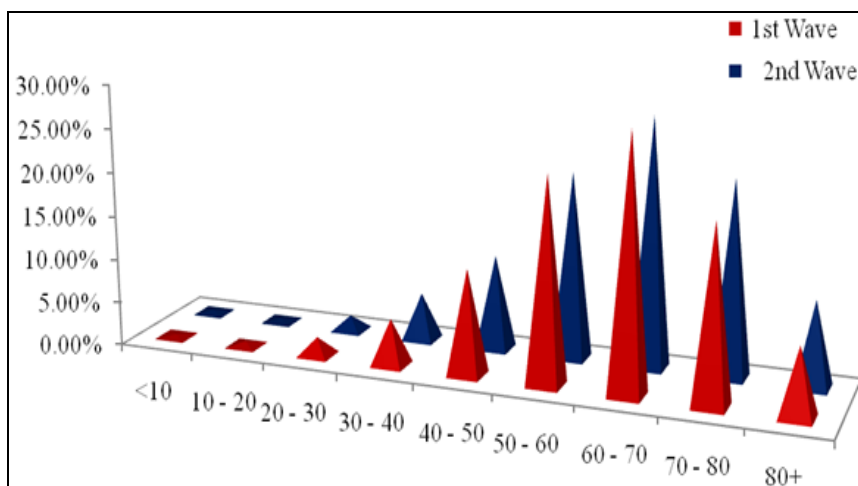


Fig. 10. Mortality Rates

Table 1. Mortality rates with various age groups affected in both first and second waves

Age group (Years)	1 st Wave	2 nd Wave
<10	0.27%	0.34%
10 - 20	0.53%	0.31%
20 - 30	2.08%	1.72%
30 - 40	5.27%	5.39%
40 - 50	11.98%	10.82%
50 - 60	23.29%	21.23%
60 - 70	28.76%	28.21%
70 - 80	19.99%	22.17%
80+	7.82%	9.81%

Effect of Covid-19 on Different Countries: A Comprehensive Review

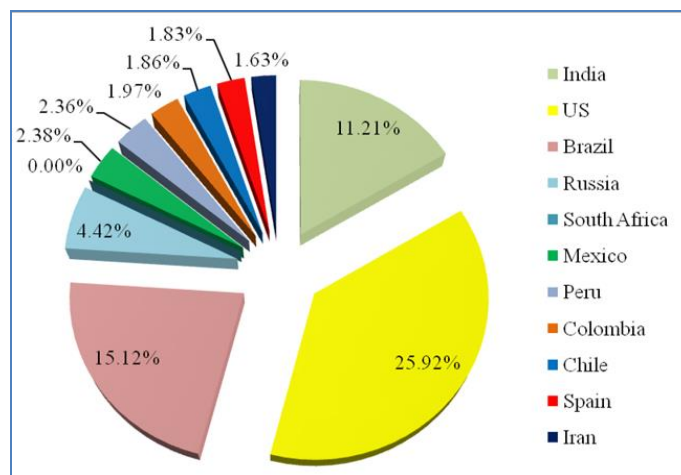


Fig. 11. Positivity rate

MEDICATIONS

Favipiravir (Fabiflu), Anticoagulant therapy, Oxygen, Virafin, 2-deoxy-D-glucose (2-DG) were some of the medications that were used during the second wave of COVID-19.

MUCORMYCOSIS: People healing from COVID-19 have been diagnosed with Mucormycosis, a black fungus. The fungus spreads via the sinuses and into the intraorbital and cerebral areas. Patients might die in 50-80% of cases if the disease progresses unchecked. Mucormycosis can occur when a patient's immune system is impaired and they inhale Mucor spores. This is an uncommon, non-contagious condition that, if not treated promptly, can be disabling or deadly. Mucormycosis infections have been more common in the recent decade, owing to a rise in the number of organ transplants.

Mucormycosis is more likely to occur in people who have COVID-19, HIV/AIDS, and other viral infections, congenital bone marrow disease, severe burns, malignancies, and untreated or irregularly managed diabetes. Because steroids impair the immune system, COVID-19 patients who have received steroids are more vulnerable. As a result, steroids should only be used when required.

BLACK-FUNGUS: As of May 27, 2021, India has over 10,000 black fungus infections, with mucormycosis becoming a major hazard during the continuing second wave of the Covid-19 epidemic. The causes of this outbreak are being investigated as uncontrolled blood sugar levels and steroid misuse during Covid therapy. In extreme situations, the fungus can harm the eyes, nose, face, lungs, and even the brain. People who have been given steroids for a long period, who have other comorbidities, or who have been on oxygen for a long time are more likely to get the infection. It can be lethal if not treated promptly.

WHITE-FUNGUS: India announced the first instance of white fungus infection in Patna on May 21, 2021. White

fungus is a kind of candidiasis that, according to the US Centers for Disease Control and Prevention (CDC), may be dangerous if it becomes invasive. "Invasive candidiasis (white fungal infection) is a dangerous illness that can harm the blood, heart, brain, eyes, bones, and other bodily organs," according to the CDC. White fungus infection, like black fungus, affects persons who have a poor immune system owing to a pre-existing illness such as diabetes or the use of steroids. Cough, low oxygen levels, fever, diarrhea, black spots on the lungs, white patches in the oral cavity, and skin lesions are the first signs of white fungus. Because of how it spreads, the white fungus is more dangerous. It can affect the brain, digestive system, respiratory organs, kidneys, and even private areas.

YELLOW-FUNGUS: In Uttar Pradesh, a patient recuperating from COVID-19 was diagnosed with yellow fungus, although he had previously been afflicted with both black and white fungal diseases. Yellow fungus is considerably more harmful since it starts inside the body, making it more difficult to diagnose and cure. Yellow fungus, also known as mucor septic, is a fungal illness that, according to specialists, mostly affects lizards rather than people. The signs of yellow fungus infection include weight loss, decreased appetite, and fatigue. However, if not caught early enough, symptoms such as pus leaking, sunken eyes, organ failure, poor wound healing, and necrosis can grow more severe.

CONCLUSION

The world is currently witnessing a dramatic disruption of every day owing to the rapid progression of the coronavirus disease 2019 (COVID-19) pandemic. As the pandemic evolves, there is an urgent need to better understand its epidemiology, characterize its potential impact, and identify mitigatory strategies to avert pandemic-related mortality. Patients with medical comorbidities are having a high risk of developing serious events i.e., ICU admission, mechanical intubation, and death. A huge number of individuals were affected in China, with the infection spreading effectively

Effect of Covid-19 on Different Countries: A Comprehensive Review

from individual to individual. Yet the infection has now settled itself in 177 nations and regions throughout the planet in a quickly extending pandemic. The knowledge of these comorbidities can help us better stratify COVID-19 patients at higher risk allowing a more targeted and specific approach in preventing fatal events. Epidemics and pandemics come and go, but local, national, and global abilities to determine the efficiency of their efforts in averting deaths are critical.

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