

Factors of Coronavirus

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Though the world has seen many epidemics, it is now concerned with minimising the impact of Corona virus disease (Covid) which started in China in December 19. This paper tries to compare the Covid cases and deaths per million population. The paper has come to the conclusion that Covid-19 is found more in Europe and America and it is less in Asian countries and still in less in Africa. Major epidemics in the past were predominant in Europe and America. This paper tries to examine the factors of Covid-19 such as care taken during the epidemics, racial features, immunity and type and amount of food consumed, urbanisation, migration and political structure of the country. The paper will also highlight the implications arising from the factors. While some factors such as ethnicity, climate and extent of urbanization cannot be changed, factors as increasing immunity, type and amount of food taken can be changed.

[**Keywords** : Covid-19, Epidemics, Immunity, Atmospheric temperature, Urbanization, Migration, Political structure]

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1. Introduction

In spite of the best efforts of all the countries all over the world such as lockdowns, precautions, thermal screening, vaccinations etc. the epidemic, Covid-19 still lingers on. So, a proper study of the epidemic is necessary not only by the medical microbiologists, physicians, epidemiologists and immunologists but also by the social scientists. Writing on the ordeal of social sciences, Brij Mohan premised on three formulations: 1) the sciences of social phenomenon have a role in shaping our future; 2) our past and present approaches have been pretentious at best; and 3) social scientists for the future should conscientiously look into their professional selves to achieving a society that is conducive to human existence. (2012: 208-209) In this paper, an effort is made to study the factors of Covid-19 and understand their implications on the society i.e. to achieve a society that is conducive to human existence in the realm of health.

2. Major Epidemics in the World

Intermittent outbreaks of infectious diseases have had profound and lasting effects on societies throughout history. Those events have powerfully shaped the economic, political, and social aspects of human civilization, with their effects often lasting for centuries. Epidemic outbreaks have defined some of the basic tenets of modern medicine, pushing the scientific community to develop principles of epidemiology, prevention, immunization, and antimicrobial treatments. In the realm of infectious diseases, a pandemic is the worst case scenario. When an epidemic spreads beyond a country's borders, that's when the disease officially becomes a pandemic. Communicable diseases existed during humankind's hunter-gatherer days, but the shift to agrarian life 10,000 years ago created communities that made epidemics more possible. Malaria, tuberculosis, leprosy, influenza, smallpox and others first appeared during this period.

The more civilized humans became, building cities and forging trade routes to connect with other cities, and waging wars with them, the more likely pandemics became. See a timeline below of pandemics that, in ravaging human populations, changed history. Experts warn a global pandemic will halt humanity as we know it in the next 20 to 30 years. Past epidemics may offer some insight into what the future holds. Here's a look back at some of them.

Table-1 : Past Global Epidemics

3000 B.C.	The first recorded epidemic took place in China in 3000 BC where an entire village was wiped out. The archaeological site is now called "Hamin Mangha" and is one of the best-preserved prehistoric sites in north-eastern China and the site was not inhabited again.
430 B.C	Another epidemic in the form of plague took place in Athens in 430 B.C. which lasted for five years. It also spread to Libya, Egypt and Ethiopia. The death toll was as high as 100,000 people. The Greek historian Thucydides (460-400 B.C.) wrote that "people in good health were all of a sudden attacked by violent heats in the head, and redness and inflammation in the eyes, the inward parts, such as the throat or tongue, becoming bloody and emitting an unnatural and fetid breath" (quoted by Jarus, 2020).
165 A.D.	The Antonine Plague, which may have been smallpox, started in the year 165 A.D. in the Roman Empire and killed over 5 million people. The epidemic was said to have been brought into the Roman Empire by soldiers returning home after a war against Parthia. The epidemic lasted for 15 years and ended in 180 A.D. after which there began instability in the Roman Empire.
251 A.D.	With the plague of Cyprian (251-271A.D.), people thought that the end of the world had come. This plague was so severe that it was estimated to have killed 5,000 people a day in Rome alone.
541 A.D	The Plague of Justinian, which began in 541 and continued on and off for nearly 200 years, killed 50 million people in the Middle East, Asia and the Mediterranean basin, according to some estimates. The plague is caused by bacteria that are spread by rats that were bitten by infected fleas.
1334	What's known as the Great Plague of London actually started in China in 1334 and spread along trade routes, wiping out entire towns. Florence, Italy, lost a third of its 90,000 residents in the first six months. Overall, Europe lost 25 million people.
1346	Another terrible pandemic was Black Death which lasted for eight long years (1346-1353) in Europe, Asia and North Africa. 75 to 200 million people perished due to this plague. In fact, it wiped out over half of Europe's population. As a result, the course of Europe's history was changed. With so many dead, labour became harder to find, bringing about better pay for workers and the end of Europe's system of serfdom.
1519	There were approximately 25 million people living in what is now called Mexico when Hernando Cortes arrived in 1519. A smallpox epidemic killed between 5 and 8 million of the native population in the following two years. Over the next century, less than 2 million would survive this and other communicable diseases brought by European explorers.

1545	Another epidemic, cocoliztli epidemic was a form of viral hemorrhagic fever that killed 15 million inhabitants of Mexico and Central America between 1545 and 1548. In the 16th century, there were many American plagues which are a cluster of Eurasian diseases brought to the Americas by European explorers. As a result, around 90 percent of the indigenous population in the Western Hemisphere was killed off.
1633	Smallpox reached Massachusetts in 1633, brought by settlers from France, Great Britain and the Netherlands. It quickly spread to the Native American population, which had until now been free of this communicable disease. It's unclear how many were killed by smallpox, though historians estimate some 20 million may have died after the Europeans landed.
1665	The Great Plague of London started in 1665 caused a mass exodus from London. By the time the plague ended in 1666, about 100,000 people, including 15 percent of the population of London, had died. Adding to the misery of London, on Sept. 2, 1666, the Great Fire of London started lasting for four days and burning down a large portion of the city.
1720	In the Great Plague of Marseille (1720-1723) as many as 100,000 people died in Marseille and surrounding areas. It's estimated that up to 30 percent of the population of Marseille may have perished.
1770	In the Russian plague of 1770-72 the terror of quarantined citizens erupted into violence. Riots spread through the city and culminated in the murder of Archbishop Ambrosius, who was encouraging crowds not to gather for worship. By the time the plague ended, as many as 100,000 people may have died. Yet, restoration of law and order was a big problem.
1793	Philadelphia was struck with a yellow fever epidemic in 1793 that killed a 10th of the city's 45,000-person population.
1860	The Modern Plague began in the 1860s and killed more than 12 million people in China, India and Hong Kong. It wasn't until the 1890s that people figured out how the bacterial infection was being spread and a vaccine was created.
1889	The Flu pandemic which started in Russia in 1889 killed around a million people around the globe.
1901	A smallpox epidemic in Boston infected 1,500 people in 1901. There were 270 reported deaths.
1910	The largest plague outbreak in the 20th century occurred in Manchuria between 1910 and 1911. Approximately 60,000 people died. The plague still occasionally causes smaller outbreaks in parts of sub-Saharan Africa.
1918	The great flu pandemic of 1918 and 1919 is estimated to have killed between 30 million and 50 million people worldwide. Among them were 675,000 Americans.

1952	Polio peaked in the US. Nearly 60,000 children were infected and more than 3,000 died. Three years later vaccination began to prevent the communicable disease.
1957	Asian Flu (1957-1958) started in China claimed more than 1.1 million worldwide, with 116,000 deaths occurring in the US.
1981	Acquired Immuno Deficiency Syndrome (AIDS), the recent pandemic which started in 1981, is still with us. It has claimed an estimated 35 million lives since it was first identified. Human Immunodeficiency Virus (HIV) is the virus that causes AIDS. Now, about 64 percent of the estimated 40 million living with (HIV) live in sub-Saharan Africa.
1984	In 1984, scientists identified the human immunodeficiency virus, or HIV, as the cause of AIDS. That same year the deadly disease killed more than 5,500 people in the United States. Today more than 35 million people around the world are living with an HIV infection. More than 25 million people have died of AIDS since the first cases were reported.
2003	Severe Acute Respiratory Syndrome, better known as SARS, was first identified in 2003 in China, though the first case is believed to have occurred in November 2002. By July more than 8,000 cases and 774 deaths had been reported.
2009	The global H1N1 flu pandemic may have killed as many as 575,000 people, though only 18,500 deaths were confirmed. The H1N1 virus is a type of swine flu, which is a respiratory disease of pigs caused by the type A influenza virus.
2010	An epidemic of cholera killed at least 10,000 people in Haiti in 2010 following a deadly earthquake that paralyzed the nation. The United Nations would later apologize for initially denying claims that Nepalese peace keepers brought the deadly disease to the country following the earthquake.
2012	In 2012, approximately 122,000 people worldwide died from the measles, a highly contagious disease caused by a virus. Typhoid fever kills around 216,000 people a year. Tuberculosis, an infectious bacterial disease, killed an estimated 1.3 million in 2012. These are some of the infectious diseases that most concern health officials today.
2014	The 2014 epidemic of Ebola hemorrhagic fever in West Africa was the largest Ebola outbreak on record. The virus killed more than 11,300 people before it was declared over in 2016.
2016	The World Health Organization declared a public health emergency of international concern over Zika virus predicting 3 to 4 million would be infected within a year as it was "spreading explosively" throughout the Americas. Zika is the first mosquito-borne disease to cause a birth defect. The devastating birth defect is microcephaly. The virus is also associated with miscarriage, still-birth and other neurological deficits. While not deadly in the way other epidemics are, there is a big impact on future generations when fewer children are born because parents are afraid of the virus.

2020	On 30 January 2020, the Director-General of the World Health Organization (WHO) declared the outbreak of Covid-19 to be a Public Health Emergency of International Concern and issued a set of temporary recommendations. Corona virus disease 2019 (Covid-19) is a contagious disease caused by severe acute respiratory syndrome Corona virus 2 (SARS-CoV-2). The first case was identified in Wuhan, China, in December 2019. It has since spread worldwide, leading to an ongoing pandemic. (Nayak 2020: 100-102) As on September 1, 2021, there were 219,266,321 Covid-19 cases and the pandemic has caused 4,545,164 deaths.
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3. Covid 19 Pandemic

Covid 19 emerged in Wuhan, a city in the Hubei province of China in December 2019 and spread around the world. It is said that it started with the bats being sold in Wuhan market and got transferred to humans. Further, it spread rapidly due to human to human contact. However, it remains unclear exactly how the virus first spread to humans. Corona viruses are common in certain species of animals, such as cattle and camels. In fact, the transmission of corona viruses from animals to humans is rare. Corona (in Latin corona refers to crown) virus represents crown-like spikes on the outer surface; thus, it was named as a corona virus.

SARS-CoV-2 spreads from person to person through close communities. When people with Covid-19 breathe out or cough, they expel tiny droplets that contain the virus. These droplets can enter the mouth or nose of someone without the virus, causing an infection to occur. The disease is most contagious when a person's symptoms are at their peak. Droplets containing the virus can also land on nearby surfaces or objects. Other people can pick up the virus by touching these surfaces or objects. Infection is likely if the person then touches their nose, eyes, or mouth.

Common symptoms of Covid-19 include fever, breathlessness, cough, sore throat, headache, muscle pain, chills and new loss of taste or smell. These symptoms are likely to occur 2-14 days after exposure to the virus. So, 14 days of quarantine is recommended when one travels from one place to another. Older adults are most at risk of severe illness, as are people with the following chronic health conditions such as serious heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies, kidney disease, chronic obstructive pulmonary disease (COPD), obesity, which occurs in people with a body mass index (BMI) of 30 or higher, sickle

cell disease, a weakened immune system from a solid organ transplant and type 2 diabetes. Covid 19 has SARS (Severe Acute Respiratory Syndrome) like symptoms.

On December 31 of last year, Chinese authorities alerted the World Health Organization of an outbreak of a novel strain of corona virus causing severe illness, which was subsequently named SARS-CoV-2. Several of those infected worked at the city's Huanan Seafood Wholesale Market, which was shut down on January 1. Soon China's aggressive action of shutting down transportation in some cities and suspending public gatherings began. Officials isolated sick people and aggressively tracked their contacts, and had a dedicated network of hospitals to test for the virus. On January 11, 2020 China announced its first death from the virus, a 61-year-old man who had purchased goods from the Huanan seafood market. People travelling from China spread the disease to Thailand, US, Nepal, France, Australia, Malaysia, Singapore, South Korea, Vietnam and Taiwan.

On January 30, the WHO declared the corona virus a global emergency as the death toll in China jumped to 170, with 7,711 cases reported in the country, where the virus had spread to all 31 provinces. On February 7, Li Wenliang, a doctor who was among the first to sound the alarm over the corona virus in China, died. By the end of February, countries as Kuwait, Bahrain, Iraq, Oman, Qatar, Norway, Romania, Greece, Georgia, Pakistan, Afghanistan, North Macedonia, Brazil, Estonia, Denmark, Northern Ireland and the Netherlands confirmed the first cases in these countries. On March 11, 2020, the World Health Organization (WHO) declared Covid-19 a pandemic. On March 20, corona virus related deaths surged past 10,000 globally. During this time, Europe remained the epicentre of the pandemic, with Italy reporting 4,825 fatalities and 53,578 cases. On March 31, the number of deaths due to corona virus in the US surpassed those reported by China and the US reported more than 4,000 deaths with more than 300,000 cases.

On April 21, President Donald Trump announced on Twitter that he 'will be signing an Executive Order to temporarily suspend immigration into the United States! On May 5, the United Kingdom recorded the highest official Covid-19 death toll in Europe, with more than 30,000 people dead. On May 27, the United States became the first country to reach a six-figure death toll, as the number of people killed from the corona virus surpassed 100,000. On August 2,

the death toll in Latin America from the novel corona virus had surpassed 200,000. The United States on August 9 surpassed five million corona virus cases, the highest in the world.

On November 7, the world saw 50 million cases and on November 12, there were 661,612, the highest number of daily cases. On November 6, the U.S. reached the 10 million cases and on November 13 there were highest daily cases of 190,428. Till September 9, Brazil stood in the second position after the U.S. with 4.11 million cases and the second position was taken up by India. After the middle of August U.S. and the major countries of Europe as U.K. France, Spain, Italy, Germany, Poland and Belgium saw a second wave of corona virus. With the US elections, there was a surge of corona virus cases not only in the US but the world as a whole. Some countries have already invented vaccine and now it is administered to people. (Pais 2021: 19-21) For this study, 20 countries were selected which have crossed two million cases and the figures are given in the following table :

**Table-2 : Number of Coronavirus Cases and Deaths
as on September 1, 2021**

Country	Continent	Total Cases	Total Deaths	Tot Cases/ 1M pop	Deaths/1M pop	Population
USA	North America	40,330,712	659,927	121,016	1,980	333,267,823
India	Asia	32,857,937	439,559	23,540	315	1,395,827,756
Brazil	South America	20,804,215	581,228	97,070	2,712	214,322,393
Russia	Europe	6,937,333	184,014	47,514	1,260	146,007,547
UK	Europe	6,825,074	132,742	99,925	1,943	68,302,217
France	Europe	6,783,329	114,577	103,654	1,751	65,442,161
Turkey	Asia	6,412,277	57,000	75,088	667	85,397,309

Argentina	South America	5,190,948	112,005	113,638	2,452	45,679,507
Iran	Asia	5,025,233	108,393	58,950	1,272	85,246,093
Colombia	South America	4,911,082	125,016	95,332	2,427	51,515,310
Spain	Europe	4,861,883	84,472	103,940	1,806	46,775,929
Italy	Europe	4,546,487	129,290	75,325	2,142	60,357,964
Indonesia	Asia	4,100,138	133,676	14,807	483	276,896,388
Germany	Europe	3,970,033	92,757	47,208	1,103	84,096,714
Mexico	North America	3,369,747	260,503	25,819	1,996	130,512,404
Poland	Europe	2,889,036	75,358	76,433	1,994	37,798,189
South Africa	Africa	2,787,203	82,496	46,314	1,371	60,180,348
Ukraine	Europe	2,288,371	53,833	52,695	1,240	43,426,647
Peru	South America	2,151,010	198,329	64,196	5,919	33,507,122
Philippines	Asia	2,003,955	33,533	18,008	301	111,280,999

Source : Coronavirus Cases - Worldometer

As seen in table-2, USA leads the table with 40 million cases followed by India (32 million) and Brazil (20 million). USA with 24 percent of India's population leads the table. The above table gives the number of cases of Covid-19 and death in absolute numbers but the real indicator of the extent of the pandemic is not absolute number of cases and deaths but number of cases and deaths per one million population. The same is given in tables 2 and 3 respectively. As we see in table-3 though India is in second position in terms of total number of cases occupies 18th position in terms of total number of cases per 1 million population. It is because India is doing well in controlling the pandemic in spite of the large population.

Table-3 : Total Number of Cases/1M Population as on March 1, 2021

Country	Continent	Total Cases	Total Deaths	Tot Cases/ 1M pop	Deaths/1M pop	Population
USA	North America	40,330,712	659,927	121,016	1,980	333,267,823
Argentina	South America	5,190,948	112,005	113,638	2,452	45,679,507
Spain	Europe	4,861,883	84,472	103,940	1,806	46,775,929
France	Europe	6,783,329	114,577	103,654	1,751	65,442,161
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Germany	Europe	3,970,033	92,757	47,208	1,103	84,096,714
South Africa	Africa	2,787,203	82,496	46,314	1,371	60,180,348
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India	Asia	32,857,937	439,559	23,540	315	1,395,827,756
Philippines	Asia	2,003,955	33,533	18,008	301	111,280,999
Indonesia	Asia	4,100,138	133,676	14,807	483	276,896,388

Source : Table-2 modified.

Table-4 gives the total number of deaths per million population. Here, four South American countries i.e. Peru, Brazil, Argentina and Columbia top the table. The major concern is that of Peru which has nearly six thousand deaths per million population.

Table-4 : Total Number of Death/1M Population as on March 1, 2021

Country	Continent	Total Cases	Total Deaths	Tot Cases/1M pop	Deaths/1M pop	Population
Peru	South America	2,151,010	198,329	64,196	5,919	33,507,122
Brazil	South America	20,804,215	581,228	97,070	2,712	214,322,393
Argentina	South America	5,190,948	112,005	113,638	2,452	45,679,507
Colombia	South America	4,911,082	125,016	95,332	2,427	51,515,310
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India	Asia	32,857,937	439,559	23,540	315	1,395,827,756
Philippines	Asia	2,003,955	33,533	18,008	301	111,280,999

Source : Table 2 modified.

As we peruse tables 3 and 4, we find that Covid-19 pandemic is concentrated in Europe and North and South America. It is also clear that most of the pandemics of the past have started either in Europe or in America. Further, Covid-19 is less in third world, under-developed Asian and African countries.

4. The Factors of Covid-19

Though the countries of Europe and America consisted of developed countries with good sanitation and health facilities what are the reasons for the wide spread of the pandemic? Below, an attempt is made to study the factors of Covid-19.

4.1 Care Taken

Countries like China and India, though most populous, have taken good care during the epidemic. Though the epidemic started in China, the early responses and measures adopted such as early reporting and situation monitoring, large-scale surveillance, and preparation of medical facilities and supplies, were all successful in reducing the epidemic. Similarly, a series of announcements of lockdowns made by Indian Prime Minister, Shree Narendra Modi, contact tracing, thermal screening, hospitalisation of patients and

quarantining the visitors reduced the spread of the pandemic. Though there were attacks on medical personnel, Prime Minister Modi was firm. In terms of total numbers, USA is the most affected country in the world. At the time of writing this article, there were 40 million cases of Covid-19 and 660, deaths. There are varying reasons for this. First of all, people did not co-operate, there were instances of revolts. Secondly, then President of USA, Donald Trump did not take much care, also refused to wear a mask and tested positive for Covid-19. Now, with Joe Biden at the helm of affairs the number of daily cases and deaths is coming down. Though various countries have taken different steps as restrictions on travel, transportation, reduction in mass mobility specially of the senior citizens, protection of work life, improvement of healthcare system, evacuation of citizens stranded abroad, economic measures and social assistance, coronavirus has spread fast.

4.2 Racial and Cultural Factors

Covid-19 has further exposed the strong association between race, ethnicity and culture. Anthropologists on the basis of anthropometric traits have classified populations of the world into three main races and they are: Caucasoid, Mongoloids and Negroid. They have classified many other subgroups within the larger ethnic groups. As we see in tables 3 and 4 most of the cases of Covid-19 is found in Europe and in America. There are a good number of cases in South America too. South America is home to 400 million people, of which 180 million is composed of Whites with several different European extractions and other lineages. (https://en.wikipedia.org/wiki/Demographics_of_South_America) In tables 2 to 4, we find only one country from Africa i.e. South Africa where there are 10 percent Whites. So, Covid-19 is maximum among Caucasoids, moderate among Mongoloids and least among Negroids. The contradiction is that though the Caucasoids have good physical environment, housing, occupation, education, health care and economic stability, the incidence of Covid-19 is more among them. Within a country the case may be different. Evelyn K. (2020) in her article, "It's a racial justice issue" holds that Black Americans are dying in greater numbers from Covid-19. It may due to discrimination, healthcare access and utilization, type of occupation, educational, income, and wealth gaps and housing. Table-5 shows the number of cases per million population in top five countries in

each continent. As we observe the cases are highest in Europe and North and South America. It is much less in Asia and Africa.

Table-5 : Number of Cases per Million Population in Top Countries of Each Continent

Europe		North America		South America	
Spain	104,279	USA	122,131	Argentina	113,829
France	104,101	Cuba	59,425	Brazil	97,308
UK	101,091	Canada	39,633	Colombia	95,401
Italy	75,549	Guatemala	26,458	Chile	84,947
Russia	47,773	Mexico	25,957	Peru	64,253
Asia			Africa		
Turkey		75,626		Tunisia	56,006
Iran		59,625		South Africa	46,617
India		23,602		Libya	44,910
Philippines		18,336		Morocco	23,428
Indonesia		14,867		Ethiopia	2,641

Cultural factors too play important role in preventing Covid-19. In Thailand and India, where virus numbers are relatively low, people greet each other at a distance, with palms joined together as in prayer. In Japan and South Korea, people bow, and long before the coronavirus arrived, they tended to wear face masks when feeling unwell. People from most of the Asian countries take care of the elderly at home unlike the developed countries of Europe and America where they are taken care in the homes of the elderly, which naturally prevents the spread of Covid-19.

4.3 Development Perspective

Countries are labelled as either developed or developing countries. A number of different criteria exist for defining whether a country is considered a developing country or not. United Nations Development Programme's (UNDP) Country Classification System is calculated from the Human Development Index (HDI), which aims to take into account the multifaceted nature of development. HDI is a composite index of three indices measuring countries achievement in longevity, education and income. It also recognizes other aspects of development such as political freedom and personal security. As we

see in tables 2 and 3, the developed countries had greater number of cases and deaths per million population due to Covid-19 compared to the developing countries. The developed countries of the world were ill-prepared for the pandemic that they have suffered. When we compare developed to developing countries, the sophisticated parameters we use do not necessarily address the weaknesses in the healthcare systems of developed countries that make them susceptible to crises like the present pandemic. We strongly suggest that better preparation for such events is necessary for a country to be considered developed. (Freed, J.S. et al. 2020)

4.4 Immunity

Racial factors can also be correlated with immunity factor. The immune system protects against viruses and diseases and produces antibodies to kill pathogens. The immune systems of any two individuals and also groups of individuals can respond differently. Researchers ponder why Covid-19 appears deadlier in the U.S. and Europe than in Asia and Africa. It is observed that Africans, Asians and Europeans have genetically different immune systems. Though the epidemics are supposed to hit harder the urban areas with denser population and poor socio-economic conditions, i.e., in slums, it has not happened in Dharavi in Mumbai (biggest slum in Asia). Immunity exhibited by Indians against Covid-19 has to be explored. Particularly, the three main killers of Tuberculosis, HIV and Malaria have plagued India, Africa and several countries in the Southern hemisphere much more than the European and North American nations. Further, the persistent usage of BCG vaccination in India since the late 1940's could have provided a boost to develop robust innate and adaptive immunity against infectious agents and that could include the Covid-19 virus. Genetic factors such as the relationship of blood groups with the prevalence of Covid-19 is also studied. In the study of Acik and Bankir (2021) the prevalence of COVID-19 in the A, B, and AB blood groups was higher than that in the healthy blood donors; it was lower in the O blood group.

4.5 Atmospheric Temperature

The impact of Covid-19 is more evident from countries in the Northern hemisphere than those in the Southern and those positioned adjacent to the Equator. With few exceptions, the infection rate, severity and mortality are significantly over-

represented in countries like Italy, Spain, USA, UK and several others. Temperatures vary from the north of Northern hemisphere compared to tropical countries which are near the equator. Since most respiratory viruses are known to show a seasonal pattern of infection, it has been hypothesised that Covid-19 may be seasonally dependent as well. The study of Alexandre Rouen et al. suggests that high temperatures might dampen Covid-19 propagation, while lower temperatures might increase its transmission (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7463156/>). In the study of I. Roy similar conclusions are drawn. Based on the temperature of March and April, various degrees of vulnerability were identified and countries were specified. The maximum reported case, as well as death, was noted when the temperature was in the range of around 2°C to 17°C. Countries like the USA, UK, Italy and Spain belonged to this category. The vulnerability was moderate when the temperature was less than around 2°C, e.g. Russia, parts of Canada and a few Scandinavian countries. For temperature 27°C and above, a significantly lesser degree of vulnerability was noted. Countries from South Asian Association for Regional Cooperation, South-East Asia, the African continent and Australia fell in that category (<https://link.springer.com/article/10.1007/s13762-020-02991-8>).

4.6 Food Habits

The type of food and amount of food consumed is an important factor of resistance to infection. Much literature exists in Ayurveda and other Indian systems of medicine on the definitive beneficial effects of Indian spices in augmenting immunity. Spices like capsicum, cardamom, cinnamon, clove, coriander, cumin, garlic, ginger, kokum, nutmeg, pepper, saffron, tamarind, turmeric etc. are the most common food ingredient of the Indian kitchen which are instrumental in developing immunity. The study of Yehya Elsayed and Naveed Ahmed Khan showed that there is a clear interrelated prevalence between the total number of Covid-19 cases per million population tested and the gram of spice supply per capita per day. Nations with lower consumptions of spices per capita showed greater number of Covid-19 cases per million population (<https://pubs.acs.org/doi/abs/10.1021/acchemneuro.0c00239>). Obesity is the result of consuming more food than what is required for the body which is the hallmark of developed countries. Since the pandemic began, dozens of studies have reported that many of the sickest

Covid-19 patients have been people with obesity. (Meredith Wadman) Further, a pan-India serosurvey conducted by the Council of Scientific and Industrial Research (CSIR) has suggested that vegetarians might be at a lower risk of contracting coronavirus (India Today, 2021).

4.7 Urbanization

Urbanization is a crucial factor in the spread of Covid-19. Cities are home to more than half of the world's human population. Deep inequalities and poverty mark cities in both developed and developing countries. After spreading in China, Covid-19 quickly emerged in urban centers around the world. Given the high concentration of population and economic activities in cities, they are often hotspots of Covid-19 infections. Countries such as USA (82.7%), UK (83.9%), Italy (71%), Germany (77.5%) and France (81%) have higher urbanization rate and have greater incidence of Covid-19 cases per million population whereas Indonesia (56.6%) and India (34.5%) have lesser percentage of urbanization and have lesser incidence of Covid-19. So, Covid-19 is directly related to the rate of urbanization. Greater the rate of urbanization, greater is the mix-up of people whereas in the villages people live far away from each other and mix less often. Geographers and urbanists will thus need to explore these emerging relationships between extended patterns of urbanization and infectious disease outbreaks through an interdisciplinary approach to prevent and mitigate against future disease outbreaks.

4.8 Migration and Travelling

Migrants are considered vulnerable to the spread of Covid-19. In most of the countries, Covid-19 started with the migrants. As of 1 March 2021, emigrants from the 20 countries with the highest number of Covid-19 cases accounted for 31 percent of the total international migrant stock. Further, available international data show that at least 7 countries - the United States, the United Kingdom, France, Spain, Italy, Germany and Czechia - depend on foreign-born workers in the critical sector of healthcare services. Living conditions in crowded housing pose a particular risk to the spread of Covid-19 among migrant workers. People travel for different purposes as employment, education, business, leisure, adventure, etc. People from developed countries travel more than

the people from underdeveloped countries as a result the extent of Covid-19 is more among them. Now, various countries have imposed restrictions on travel.

4.9 Political Structure

Covid-19 has put pressure on political systems everywhere to deliver effective governance on an emergency basis. The spread of the Covid-19 is changing how political leaders are making decisions at the local, national and global level. Though Covid-19 started in China, the early responses and measures adopted by the authoritarian China, such as early reporting and situation monitoring, large-scale surveillance, and preparation of medical facilities and supplies, were all successful in reducing the epidemic in China generally and in the epicenter Wuhan specifically. On the contrary, in democratic United States of America in some places people revolted. In India there was surge of cases and deaths due to Covid-19 during the second wave because both the governments and the people were careless regarding following the Covid-19 norms.

4.10 Initiative by Women Leaders

Research has been done on how women leaders at the helm seem to have handled the coronavirus pandemic significantly better than their male counterparts. For example, Germany's Angela Merkel, New Zealand's Jacinda Ardern, Denmark's Mette Frederiksen and Bangladesh's Sheikh Hasina have been exemplary in dealing with Covid-19 pandemic in their respective countries. This may be due to the proactive and coordinated policy responses adopted by female leaders. The study, carried out by Supriya Garikipati, University of Liverpool, and Uma Kambhampati, University of Reading, revealed that agile policy measures in the initial three months of the pandemic in female-led countries saved nearly two times more lives than those run by male leaders despite having similar numbers of cases. Moreover, an important facet the study highlighted is the fact that women were less willing to take risks with lives and imposed a nationwide lockdown significantly earlier than male leaders. (Abhishek De, 2020).

5. Implications

Covid-19 is the major epidemic of our times. So far, we had heard about major epidemics and now we have experienced it. It has

impacted people's livelihoods and health. As on September 2, 2021, 220 million people have been affected by it and 4.5 million have perished. The pandemic is far from over with daily cases of around 500,000 and nearly 10,000 deaths. Taking basic precautions as wearing mask, sanitizing ones hands (and legs) and keeping social distance is very essential to prevent the virus. The governments too have to be ultra careful in protecting their citizens. Neglect by the Trump administration has cost USA more than 500,000 lives and now things are improving after Joe Biden's effort to contain the virus.

Mere economic development is not sufficient to control the virus. The so called developed countries have suffered more than the developing countries. Social development is the answer. It is achieved when economic equality, social justice, health and education and cultural equality have been provided to the people. H. M. Marulasiddaiah has devised a five-faceted development path to tackle the viruses and the problems caused by them simultaneously. They are: Education, health, kayaka (corporeal), harmony and the people's power. (1912: 195)

Caucasoids, people living in cold climates and people living in towns and cities cannot help themselves because of the situation they are in, but they can improve their immunity by having proper exercises (yoga may be a good option) and consuming proper food with spices. Over eating should be avoided because obesity may be the invitation not only for Covid-19 but also for other sicknesses as high blood pressure, diabetes etc. Excessive travelling should be avoided. Science and technology have come to the rescue of people. Modern technology accelerated use of machines and devices at the time of Covid-19. Modern technology has helped us in ameliorating our troubles by helping us through health management, education, entertainment, changed business practices and making people gadget savvy (Kamath, 2020 : 119). Vaccination will prevent the epidemic to a great extent.

6. Conclusion

Covid-19, epidemic of our times, has created havoc in the lives of people in multiple ways as loss of employment, free movement, fear, insecurity etc. This article has analysed the direct and indirect factors of the epidemic. Since the epidemic is far from over, we have to be vigilant. Since we are helpless with the indirect factors, we can

prevent the epidemic by taking precautions and increase our immunity through proper exercises and diet. Let us hope that the Covid-19 epidemic will vanish with the administration of vaccine.

References

- Acik, Yanardag D. and Bankir, M., "Relationship of SARS-CoV-2 Pandemic with Blood Groups" (2021). <https://www.karger.com/Article/FullText/515609> Accessed on September 6, 2021.
- De, Abhishek, "Why women leaders have fared better than men in handling Covid-19?" (2020). <https://indianexpress.com/article/world/women-leaders-jacinda-ardern-angela-merkel-fared-better-in-handling-covid-19-6562933/> Accessed on September 6, 2021.
- Demographics of South America from *Wikipedia*, the free encyclopedia. https://en.wikipedia.org/wiki/Demographics_of_South_America Accessed on March 10, 2021.
- Elsayed Yehya and Khan, Naveed Ahmed. <https://pubs.acs.org/doi/abs/10.1021/acchemneuro.0c00239> Accessed on March 11, 2021
- Evelyn K., "It's a racial justice issue": Black Americans are dying in greater numbers from Covid-19, 2020. Available: <https://www.theguardian.com/world/2020/apr/08/its-a-racial-justice-issue-black-americans-are-dying-in-greater-numbers-from-covid-19> Accessed March 19, 2021.
- Freed, J. S. et al., "Which Country is Truly Developed? COVID-19 has Answered the Question", *Annals of Global Health*, 86(1), 2020, 51. DOI: <http://doi.org/10.5334/aogh.2894> Accessed March 22, 2021.
- India Today*, "Are vegetarians really at lower risk of contracting coronavirus?" (2021). <https://www.indiatoday.in/coronavirus-outbreak/story/are-vegetarians-really-lower-risk-contracting-coronavirus-1760497-2021-01-19> Accessed on September 6, 2021.
- Jarus, Owen, "20 of the worst epidemics and pandemics in history" (2020). <https://www.livescience.com/worst-epidemics-and-pandemics-in-history.htm> Accessed on November 12, 2020.
- Kamath, Vasudeva K., "Covid-19 and Modern Technology", *Samaja Shodhana. Mangaluru*, Mangalore Sociology Association, Vol 28, No. 1 & 2, 2020.
- Marulasiddaiah, H. M., "Panchmukhi Path : A Development Strategy", Pais, Richard (ed.), *Perspectives on Social Development*, Jaipur and New Delhi : Rawat Publications, 2012.
- Mohan, Brij, "Guns, Greed and Gods : The Ordeal of Social Sciences", Pais, Richard (ed.), *Perspectives on Social Development*, Jaipur and New Delhi : Rawat Publications, 2012.
- Nayak, Jayavantha, "The Economic Impact of the Covid-19 Outbreak : Opportunity for India to become Self-reliant", *Social Science Gazetteer: Journal of the Indian Social Science Association*, Agra. Vol.15. No. 1 & 2, 2020.

- Pais, Richard, "Covid-19 and Indian Society", *Social Science Gazetteer : Journal of the Indian Social Science Association*, Agra. Vol. 15. No. 1 & 2, 2020.
- Pais, Richard, "Covid-19: Origin, Development and Impact", *Contemporary Social Sciences*, Vol. 30. No. 1 (January-March), 2021.
- Rouen, Alexandre et al., "COVID-19: relationship between atmospheric temperature and daily new cases growth rate". <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7463156/> Accessed on March 11, 2021.
- Roy, I., "The role of temperature on the global spread of COVID-19 and urgent solutions" (2020). <https://link.springer.com/article/10.1007/s13762-020-02991-8> Accessed on March 20, 2021.
- Wadman, Meredith, "Why COVID-19 is more deadly in people with obesity-even if they're young" (2020). <https://www.sciencemag.org/news/2020/09/why-covid-19-more-deadly-people-obesity-even-if-they-re-young> Accessed on March 11, 2021. ★