

# COVID-19: A Geo-Anthropogenic Analysis

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**Abstract:** *A Horrible and Disastrous pandemic of the 21st century Originated in November 2019 as first case was reported in Wuhan China. Is COVID-19 to be known as Geo-identical disaster? This originated in specific Geo-anthropogenic conditions. Here we investigate these factors with their critical analysis. Investigation conducted on available Geo-anthropogenic parameters with related data investigation and analysis. Numerous factors like climate, location and latitudinal extent, Immigration and migration rate and trend, anthropogenic factors, Tourist places, Cultural cohesion, Ethnic and racial traits, Demographic composition, weak immunity, population density, food habits and wet markets are studies and found responsible for the chain spread of COVID-19. Above factors deeply evaluated and justified accordingly. The various techniques have been adopted to check the spread of COVID-19 by different countries in the world. The immigration and migration checks, large scale screening of the people, sanitization, social synthesis distancing, ventilation and medical testing and support etc. Same time Geo-anthropogenic factors like nature-nurture, geomorphic features, physiographic barriers, Benefits of Dirt -The hygiene hypothesis, differential immunity, demographic composition, climatic differences are studied and found playing important indirect role to restrict the spread in some extent.*

**Keywords:** zoonotic, patient zero, nature-nurture, wet market, Lockdown and Quarantine

## 1. Introduction

COVID-19 is originated in WUHAN China and spreading all over the world pandemically, challenging and threatening all the human advancement. A 57 year old WUHAN shrimp seller has been identified as 'patient zero' for COVID-19. In November 2019 first case reported in Wuhan and the counting is still on. All hot spots of corona virus are situated in Humid Subtropical climate. New York USA, Wuhan Hubei China and huge area of Italy, Spain, France and England (as per Koppen's world climatic classification) have almost the same climate. The Countries having highest immigrated population from China e.g. Italy etc and France, USA, Spain, China and Italy are the top five tourist destinations of the world, have shown explosive spread. Pandemic struck very hard on elderly population above 60 years of age. Various tourist spots of the world have become spreading sites of COVID-19. Tradition of meeting and greeting each other by hugging that is a close contact and it enhances community spread. Faulty social shaking boosted the chain spreading. It's long been clear that people from different parts of the world differ in their susceptibility to developing infections as well as chronic inflammatory and autoimmune diseases. Countries having the maximum percentage of elderly (above 40 years) population are worst affected in comparison to the countries (India) having maximum population of below 40 years of age. Hygiene hypothesis confirmed that those kids have a greater exposure to microbes have more white blood cells, which boosts their immune system. In China, close contacts between humans and food animals have resulted in the transmission of many viruses from animals to humans. Various geomorphologic features like glaciers flood plain terraces etc hold the key for wiping viruses and CORONA.

Numerous techniques have adopted to check the spread of COVID-19 by different countries of the world. Lockdown and Quarantine, immigration and migration checks, large scale screening of the people, sanitization, social distancing, ventilation and medical support and testing etc. Same time nature nurture, geomorphic features, physiographic barriers, Benefits of Dirt -The hygiene hypothesis,

immunity, demographic composition, climatic differences are also playing important indirect role to restrict the spread in some extent.

At present thickly populated areas of the world have high magnitude of virus spread and these areas are to be with identified and suitable disaster risk reduction plan should be prepared accordingly. Plan should be prepared on regional to national or international level. Rapid response and lockdown system should be adopted to restrict corona spread amongst community. This is a biological fission and needed a solid and concrete risk reduction plan to tackle in present and future. WHO and other international organisations of the world should prepare solid and concrete plan to restrict the spread of pandemics. A blueprint of risk reduction and safety is necessary to protect mankind on this planet. Every life is important and should be saved.

## 2. Literature Survey

Numerous time various Geo-Anthropogenic factors either enhance or are behind the spread of different viral and other diseases. These factors also create the geographical acceptability of their origin and spread. Two research groups of China independently discovered the presence of severe acute respiratory syndrome corona virus-like viruses in horseshoe bats. An astonishing diversity of corona viruses was also discovered in different species of bats China and other countries. For the recent and still ongoing avian influenza H5N1 outbreak that originated in Southeast Asia, from 2003 to 21 April 2006, 204 humans have been infected, with 113 deaths. Most patients had recent direct contacts with poultry. In continuation recent spread of Corona Virus from bats in Wuhan wet market. Seasonal spread of dengue malaria in some confined geographical conditions. Geographical habitats of some specific birds and animals and their availability in wet markets create close contact with human. This close and unsafe contact becomes the cause of spread the various viruses in human. October 20, 2016 *Source:* Cell Press its long been clear that people from different parts of the world differ in their susceptibility to developing infections as well as chronic inflammatory and

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autoimmune diseases. Now, two studies show that those differences in disease susceptibility can be traced in large part to differences at the genetic level directing the way the immune systems of people with European and African ancestry are put together. This reflects the anthropogenic differences on different geographical locations. 18 August 2005 Geographical spread of H5N1 avian influenza in birds and 20 August 2004 Avian influenza H5N1 detected in pigs in China. And more than 100 times as per the **WHO** Emergencies preparedness, response Disease Outbreak News (DONs) Disease outbreaks by countries, territories and area (China) from 2001-2020. On Mon 30 Mar 2020 12.35 BST published a new in news paper about the miracle water in the countryside around Montaldo Torinese in Italy. Water from the village is believed to have helped cure Napoleon's troops from pneumonia. According to one study scientists have found certain helpful microbes in the glaciers of Kinnar Kailash Himalayas which can completely wipe out deadly viruses. Various geomorphologic features like glaciers flood plain terraces etc hold the key for wiping CORONA virus. Nature nurture also playing an important healing eradication of various viruses in the world. Ebola has also geo-identical spread in Africa. So overall we can say that Number of factors like climate, location and latitudinal extent, Immigration and migration rate and trend, anthropogenic factors, Tourist places, Cultural cohesion, Ethnic and racial traits, Demographic composition, weak immunity, population density, food habits and close contact with animals are mainly responsible for the chain spread of COVID-19.

### 3. Geo-anthropogenic responsible factors introduction and discussion

All hot spots of corona virus are situated in Humid Subtropical climate. New York USA, Wuhan Hubei China and huge area of Italy, Spain, France and England (as per Koppen's world climatic classification) have almost the same climate. This relates suitability of climate to its growth. Corona has highest infection rate and a fast spreading trend in humid sub tropical climates (both maritime and continental) Wuhan's climate is **humid subtropical (Köppen Cfa) with abundant rainfall in summer and four distinctive seasons. Food habits and close contact with animals are mainly responsible for the chain spread of COVID-19.**



Figure 3: Location Wuhan China

### 4. Methods, Approaches and analyses

Various international organizations and WHO should work on this aspect the nature can be used for the nurture or wiping out the various viruses. Differential geographical condition react differently with same virus. Medical agencies should consider this fact. Uneven and unequal spread of various viral diseases can be controlled by adoption of different Geo-Anthropogenic techniques. Common Techniques to be adopted to check the spread of COVID-19 or other same viruses are Lockdown and Quarantine, checks on immigration and migration, large scale screening of the people, sanitization, social distancing, ventilation and medical testing etc. Same time nature nurture, geomorphic features, physiographic barriers, Benefits of Dirt-The hygiene hypothesis, immunity, demographic composition, climatic differences can play important indirect role to restrict the spread viruses. Aged persons of the society should taken as vulnerable to the various viral disasters. There are certain helpful microbes in the glaciers of Kinnar Kailash Himalayas which can completely wipe out some deadly viruses. Various geomorphologic features like glaciers flood plain terraces etc hold the key for wiping CORONA virus. Their benefits can be utilized for the controlling of disastrous spread of viruses. Physical barrier can delay the community spread of viruses and the delayed time can be used as preparation to tackle with coming viral pandemics. International human migration and immigration should be screened with first noticed incident. International cooperation and coordination very much necessary cope up this type of pandemic. Another important point is to restrict man zoonotic contact by adoption of various precautionary measures. Prevention and precautions are better than the cure.



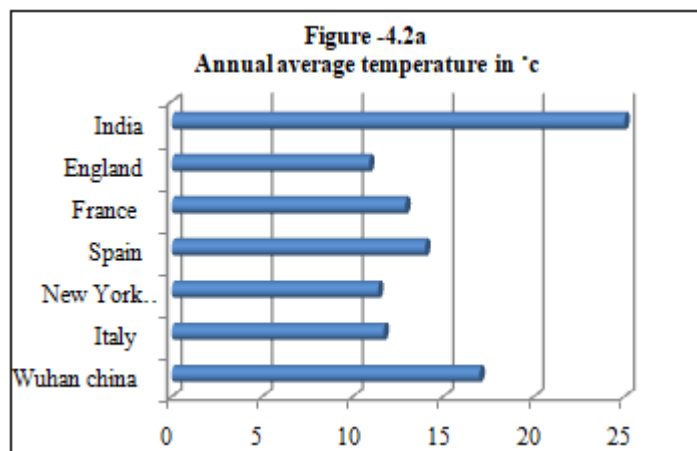
Figure 4: World Physical barriers

**4.1 Physical barriers here we quote the examples of various physical or natural barriers they play an important role to check the lithological spread of viruses. Between India and china Himalayas play the role of natural barrier that restricted or delay the spread of COVID-19. Tibet is also an example. Rocky Mountain restricted the spread to west USA (California), Sahara desert between middle Africa and European countries and various Islands**

**4.2 Climatic reflections and spread of Corona Virus**

Table 4.2: Climatic Variations

Sr no	Name of country/city	Average Annual Temperature In °c.	Precipitation Cm	Climate type	Remark
01	Wuhan Hubei China	17	110	humid subtropical	(Köppen Cfa)
02	Italy	11.7	50 South east 200	Humid sub tropical to humid continental and oceanic	(Köppen climate classification Csa).
03	New York USA	11.4	76.7	climate ranges from humid continental in the north to humid subtropical in the south	humid subtropical climate (Cfa), humid continental climates (Dfa)
04	Spain	14	99	humid subtropical climate in areas of north eastern Spain and the continental climates	Csa and Csb Köppen climate classification
05	France	12.9	76.3	winters are cool and humid	Cfb
06	England	10	88.8.	Temperate maritime climate (humid)	Cfb
07	India	25	48	Köppen system, India hosts six major climatic subtypes, ranging from arid deserts in the west, alpine tundra and glaciers in the north, and humid tropical regions supporting rainforests in the southwest and the island territories.	Am, Aw, Cwa, Csa, Dfa and Dfb etc.



Countries having similar climatic conditions showing explosive spread of COVID-19 comparatively India has different climatic conditions that restrict the explosive spread.

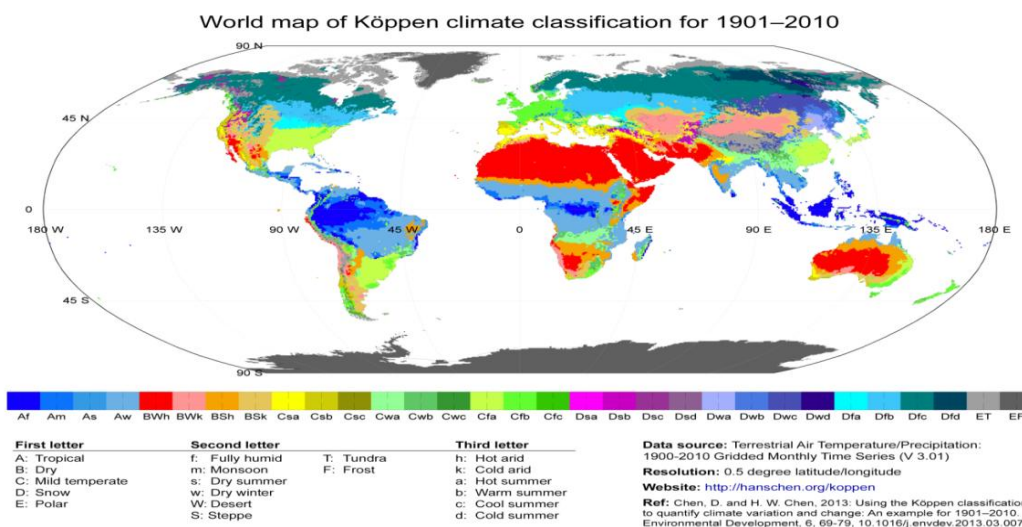


Figure 4.2 (b)

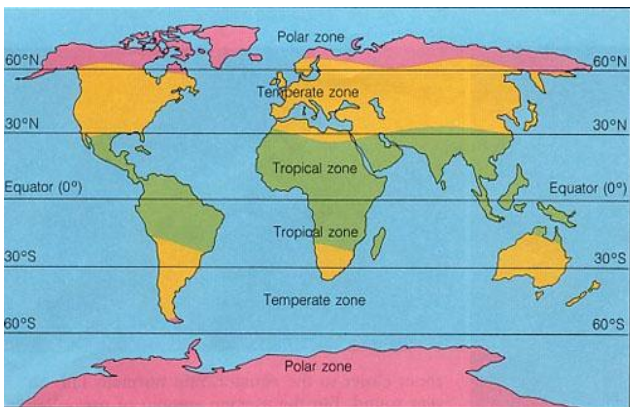
4.3 High magnitude areas are located between 35° to 50° northern latitude. But there is fear to spread in higher latitude with advancement of summer solstice up to 21<sup>st</sup> June 2020. Same time Southern hemisphere experience winter in, precautions should be taken in this regard for coming winter in southern hemisphere. This proved with later spread of COVID-19 Russia. The similar (Wuhan China) suitable

Geographical conditions enhance the spread of COVID-19 in various parts of the world. Wuhan is in east-central Hubei China, at latitude 29° 58'N to 31° 22'N the corona spread stats in month of December(winter solstice) now at the time of autumn equinox the virus spread shifted up to 40°N and 50° N Latitudes and this trend of shifting may continue up to 60°N till summer solstice on 21<sup>st</sup> June.



**Table 4.3: Latitudinal extent (COVID-19 Affected Countries)**

Sr/no	Name country	Latitudinal extent	Climatic Zone (maso zoning)
1.	Wuhan Hubei China	29° 58'N-31° 22' N	Temperate
2.	USA	25.84 N - 49.38 N	Temperate
3.	Italy	35°N - 47°N	Temperate
4.	Iraq	29.05N-37.38N	Temperate
5.	France	42°20'N-51°05'N	Temperate
6.	Spain	27°N- 44° N	Temperate
7.	England	49°51'N- 55°48'N	Temperate
8.	Germany	47°16'N - 55°03'N	Temperate
9.	India	8°4' - 37°6' N	Tropical to temperate



**Figure 4.4: World (Climatic zone) (Temperate Zone epicentre of COVID-19)**

4.4 Temperate climate zone of Northern Hemisphere is presently known as the COVID-19 zone having more than 80% cases of the world total. So the climatic effect must be considered for Geographical analyses of CORONA

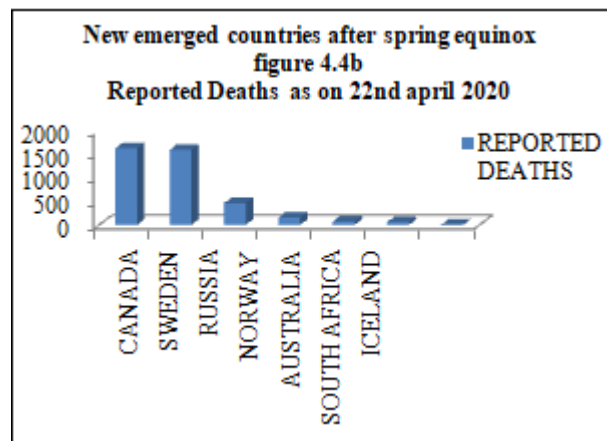
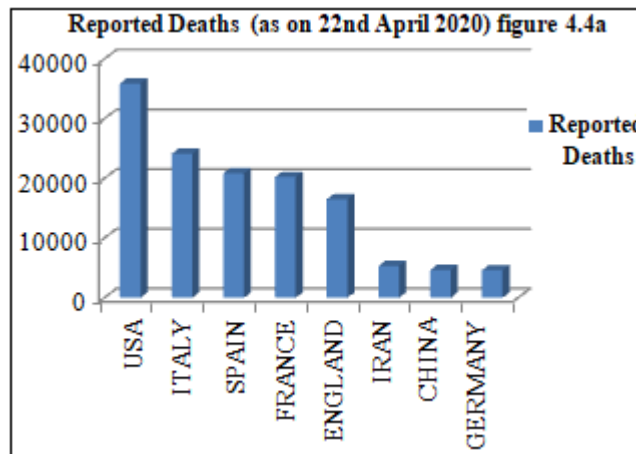
**Table 4.4a: COVID-19 Top eight effected countries on 22<sup>nd</sup> April 2020**

Sr/no	Name of Country	Confirmed Cases	Reported Deaths
01	USA	751273	35884
02	Italy	181228	24114
03	Spain	200210	20852
04	France	113513	20233
05	England	124747	16509
06	Iran	84802	5297
07	China	84253	4642
08	Germany	143457	4598

**Table 4.4 (b): COVID-19 new emerged countries with onset of spring equinox**

Sr/No	Name of Country	Confirmed Cases	Reported Deaths
01	Canada	35383	1611
02	Sweden	14777	1580
03	India	19984	640
04	Russia	52763	456
05	Norway	7113	154
06	Australia	6625	71
07	South Africa	3300	58
08	Iceland	1773	10

Source: WHO

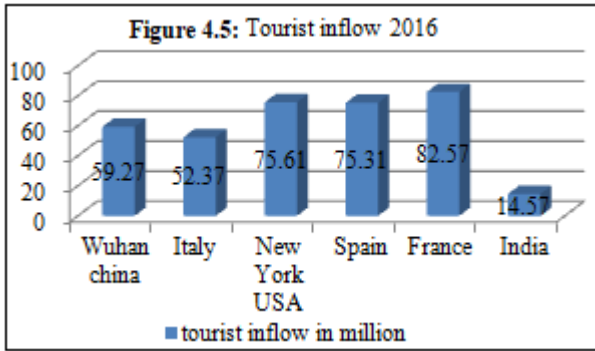


**4.5 Immigration temporary (Tourist)**

**Table 4.5: Tourist inflow**

China	Italy	USA	Spain	France	England	India
59.27	52.37	75.61	75.31	82.57	35.81	14.57
4 <sup>th</sup> most visited country	5 <sup>th</sup> most visited Country	2 <sup>nd</sup> most visited	3 <sup>rd</sup> most visited country. Madrid headquarter of World Tourism Organization	1 <sup>st</sup> tourist destination		

(Persons In million (2016) World Bank)



Top five tourist destinations of the world presently are in the list of most effected countries with corona virus. India is for behind in the list and here we are thankful.

#### 4.6 Anthropogenic factors

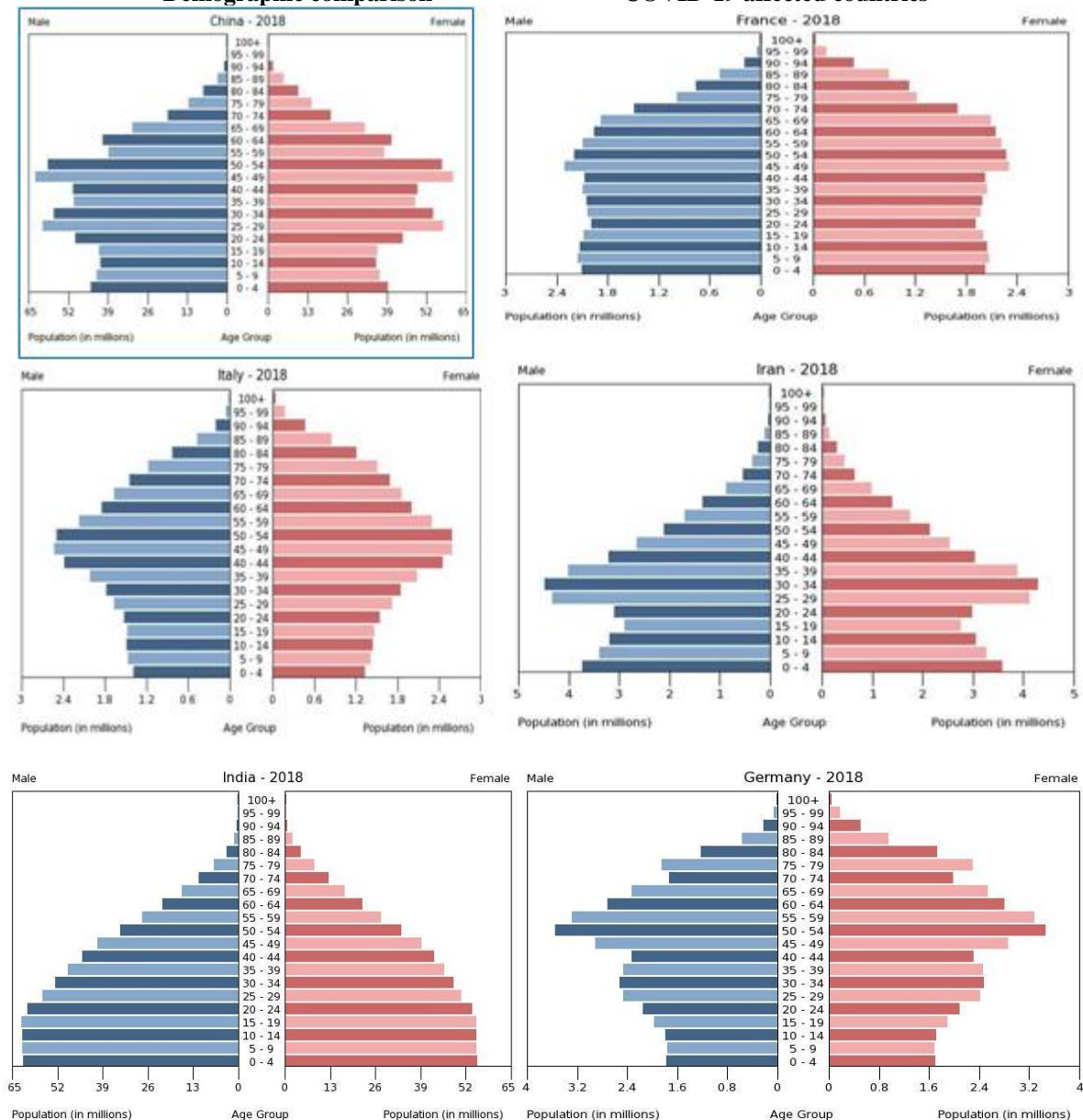
Pandemic struck very hard on elderly population above 60 years of age. This age group is highly vulnerable due to various types of age related chronic ailments. In other age groups people suffering from various chronic diseases are all on stake. Figure-4.7a

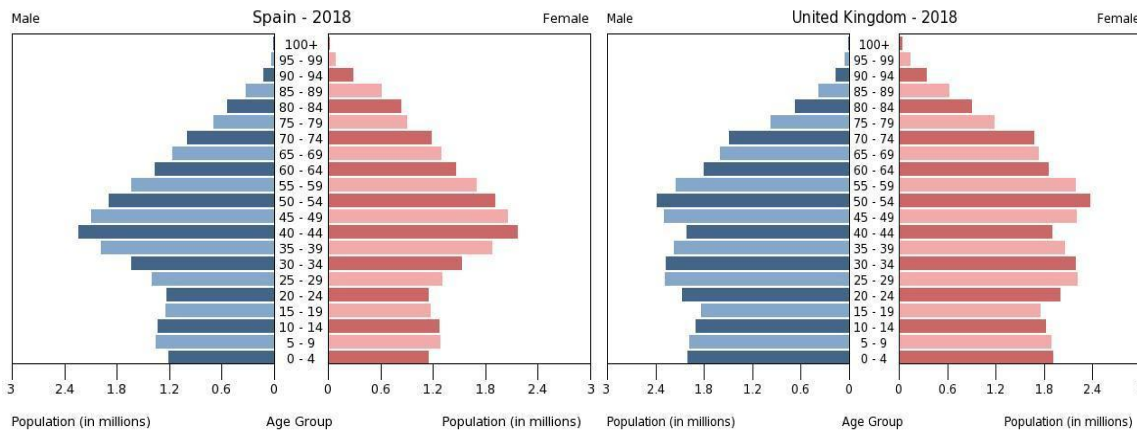
#### 4.7 Demographic composition

Figure 4.7a to 4.7i

#### Demographic comparison

#### COVID-19 affected countries





Source: CIA World Fact book

Above age pyramids showing the age and sex wise population structure of COVID-19 affected countries of the world. Countries have the maximum percentage of elderly (above 40 years) population are worst affected in comparison to the countries (India) have maximum population of below 40 years of age. It means that population above 40 years of age is more vulnerable to Corona virus. As we age, our immune response capability becomes reduced, which in turn contributes to more infections. A reduction in immune response to infections has been demonstrated by older people's response to vaccines. For example, studies of influenza vaccines have shown that for people over age 65, the vaccine is much less effective compared to healthy children (over age 2).

With 37% East and South East Asia is on top and with 28% Europe and North America on second rank in elderly population. This is the cause of high deaths in these two regions.

In these two regions China, Spain, USA, Italy, France, England and Germany are the main constituent countries and all are the major victim of COVID-19.

Table 4.7 (b): World Regional distribution (Aged population)

Sr/no	Region	Number of persons aged 65 or over in 2019(millions)	World percentage
1	world	702.9	100
2	Eastern and south eastern Asia	260.6	37
3	Europe and North America	200.4	28
4	Central and south Asia	119.0	17
5	Latin America and Caribbean	56.4	8
6	Sahara and South Africa	31.9	5
7	North Africa and West Asia	29.4	4
8	Australian and new Zealand	4.8	1
9	Oceania (excluding Australia and New Zealand)	0.5	0

4.8 Tourist places

Various tourist spots of the world become spreading sites of COVID-19. In single day number of people come together and then diffuse for various countries or another site for more and this multiply in short span of time. High rate of tourist's inflow site are vulnerable to spread of various diseases. Major tourist destinations Rome, Venice, Milan, Paris, Frankfurt, London, Madrid, Valencia, Barcelona and New York are the top hot spots of the world.

4.9 Cultural cohesion

Western culture and their attributes: This is otherwise may be good but present situation when many countries of western world have community spread of COVID-19. Initially they meet with each other by hugging that is a close contact and it enhances community spread. Faulting social shaking boosted the chain spreading of this pandemic. This should be restricted by social awareness. The air conditioner culture decreases immunity among upper class and provides favourable conditions for spread of Corona virus and other diseases. Same time hot and dry condition may help to breakdown the spread chain. Because Corona virus needs droplet to survive and spread. This can be taken otherwise.

4.10 Ethnic and racial traits

Negro and indo- African races in the world have genetic strong immunity in comparison to the other race due their adaptability to harsh climatic conditions and as are primitive ancestral of man. Europeans, Africans have different immune systems, and Neanderthals are partly to thank to their ethnicity

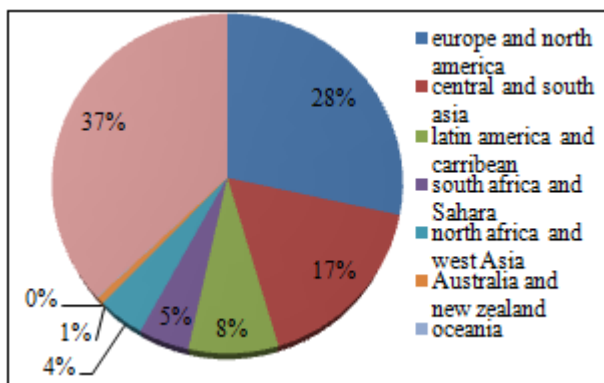


Figure 4.7 (b): World Regional Percentage of aged population

Date: October 20, 2016 Source: Cell Press: It's long been clear that people from different parts of the world differ in their susceptibility to developing infections as well as

chronic inflammatory and autoimmune diseases. Now, two studies show that those differences in disease susceptibility can be traced in large part to differences at the genetic level

directing the way the immune systems of people with European and African ancestry are put together.(1)

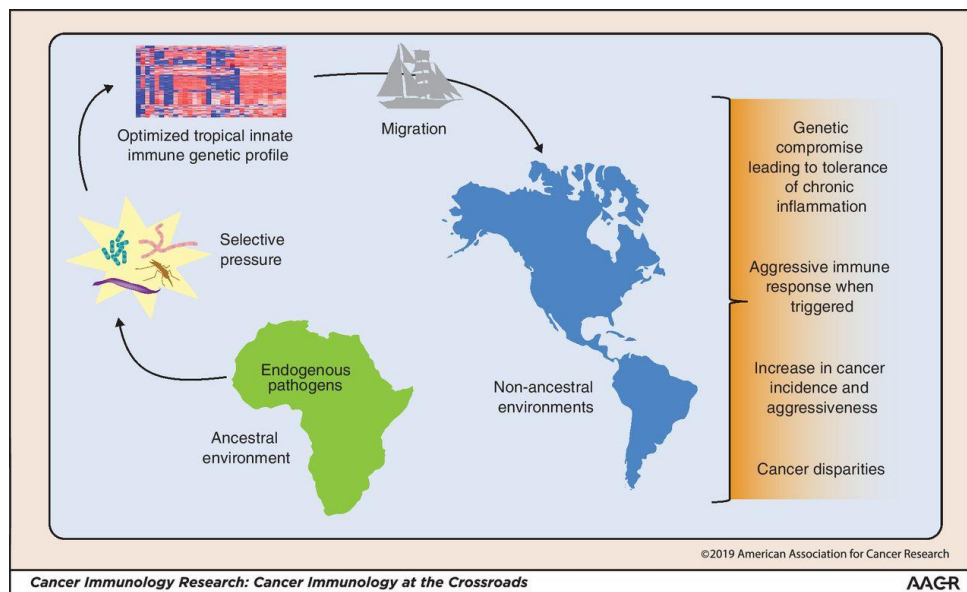


Figure 4.10: Geographic origin and effect on racial ethnic disparities immunity  
Source AACR

The researchers noted that the two studies made strikingly similar findings despite the fact that they focused on different types of immune cells. They say that more work is now needed to better understand the role of environmental and other factors, including epigenetic changes, in the differences they've observed. This study can be used to disseminate precautionary advisory to the concerned people.

#### 4.11 The Benefits of Dirt

The hygiene hypothesis, however, is more than just about how sanitized modern households have grown. Kids come into contact with microbes in a variety of ways, including contact with family members and animals and just being outdoors. Your mom probably scolded you for playing in the dirt, but doing so may be healthy, according to a 2016 study published in the *New England Journal of Medicine*. Researchers studied two traditional Christian farming groups: Amish schoolchildren and Hutterite kids. The Amish practice traditional farming, using hand-held tools, while the Hutterites use modern farm equipment, such as tractors and front loaders. Compared to the Hutterite kids, the Amish group had a far lower prevalence of asthma, the study found. Researchers tested the blood of the kids in both groups and found the Amish children had significantly more white blood cells, which are key to fighting infections. One study theorized the Amish kids had more white blood cells because they had a greater exposure to microbes, which boosted their immune system. India is developing country and more than 833 million (68.84%) live in **rural** areas while 377 million (31.16%) stay in urban areas. According to 2011 **Agricultural Census of India**, an estimated 61.5% of the 1300 million **Indian populations** is dependent on **agriculture**. They use traditional techniques in agriculture, use of handheld tools for cultivation and are highly exposed to dirt. With due effect Indian have strong immune system in comparison to western mechanised world.

#### 4.12 Nature Nurture

Italian mayor douses 'miracle water' theory for lack of corona virus cases

**Clean air and a healthy lifestyle may be more likely reasons for the absence of the virus in a Piedmont village.** Water from the village is believed to have helped cure Napoleon's troops from pneumonia. According to one study scientists have found certain helpful microbes in the glaciers of Kinnar Kailash Himalayas which can completely wipe out deadly viruses. Various geomorphologic features like glaciers flood plain terraces etc hold the key for wiping CORONA virus. Nature-nurture is a very good technique for restriction of viral spreads.

#### 4.13 Food habits and close contact with animals are mainly responsible for the chain spread of COVID-19

In China, close contacts between humans and food animals have resulted in the transmission of many microbes from animals to humans. The two most notable infectious diseases in recent years are severe acute respiratory syndrome and avian influenza. In this review, these two severe zoonotic viral infections transmitted by the respiratory route, with pandemic potential, are used as models to illustrate the role of Chinese wet-markets in their emergence, amplification and dissemination. Two research groups independently discovered the presence of severe acute respiratory syndrome coronavirus-like viruses in horseshoe bats. An astonishing diversity of corona viruses was also discovered in different species of bats. For the recent and still ongoing avian influenza H5N1 outbreak that originated in Southeast Asia, from 2003 to 21 April 2006, 204 humans have been infected, with 113 deaths. Most patients had recent direct contacts with poultry.



In continuation recent spread of Corona Virus from bats in Wuhan wet market. Reported in 57 year old WUHAN shrimp seller she is identified as 'patient zero' for COVID-19

## 5. Results and Discussion

- 5.1 Covid-19 is originated as geo-identical viral disease. Initially spread at Wuhan at latitude  $29^{\circ} 58' - 31^{\circ} 22' N$  and longitude  $113^{\circ} 41' - 115^{\circ} 05' E$  on the edge of tropical zone. And shifted northward with onset spring equinox and it continue to spread north ward as summer solstice in progress (21<sup>st</sup> June). It proved with recent spread in Russia and later spread in New York. It spread over 200 countries but pandemic spread is only in north temperate Zone ( $30^{\circ}N - 60^{\circ}N$ ) with onset of winter in southern hemisphere precautions should be taken in this regard. So, Geo-identical location should be identified to check the further spread.
- 5.2 Wuhan sits at the confluence of the Han River flowing into the Yangtze River in the East of the Jiangnan Plain along the Yangtze's middle reaches. Wuhan's climate is humid subtropical (Köppen *Cfa*) with abundant rainfall in summer and four distinctive seasons. Wuhan is surrounded with number of lakes. All intense spread areas to be known as cities of great lakes, city of Canals, riverine valleys, maritime location etc. Virus needs droplets for survival and spread so these areas have plenty of moisture and humidity. This proved in case SARS spread. Corona virus need droplet to survive and spread. This is proved that all high magnitude areas are situated in humid subtropical climates. Similar climatic areas should take more precaution to restrict spread.
- 5.3 Various natural or physical barriers are studied with help of world physical map and found the great mountains, deserts and oceans of the world have restricted or delayed the spread. And we can use these physical barriers natural lockdown in future. In delayed we can prepare a plan to fight these types of pandemics. All depends on the efficiencies of concern authorities and Governments.
- 5.4 Clean air and a healthy lifestyle may be more likely reasons for the absence of the virus in a Piedmont. Geomorphologic features and Friendly microbes should be identified with advance studies that may become helpful to tackle or restrict various viral spread.
- 5.5 On regular bases it is in favour of concerned country that they should check the temporal immigration and migration and should scan and restrict import and export of various types of viruses. Various tourist spots of the world have become spreading sites of COVID-19. In single day number of people come together and then diffuse for various countries or other sites this enhances spread. So, High rate of tourist's inflow site are vulnerable for the spread of viral diseases. This has been reported recently. Tourism destination of the world must take strict preventive steps to massive and rapid transport of viruses from one location to another.
- 5.6 This could be good in normal time but in the present situation when many countries of the western world have community spread of COVID-19. Tradition of meeting and greeting each other by hugging that is a close contact and that enhances community spread.

Faulty social shaking boosted the chain spreading. The air conditioning culture decreases immunity among upper class and provides favourable conditions for spread of Corona virus. Same time hot and dry condition may help to breakdown the spread chain..

- 5.7 Negro and indo- African races in the world have genetically strong immunity in comparison to the other races due their adaptability to harsh climatic conditions and as primitive ancestral of the mankind. Europeans, Africans have different immune systems, and Neanderthals are partly to thank their ethnicity. It's long been clear that people from different parts of the world differ in their susceptibility to developing infections as well as chronic inflammatory and autoimmune diseases. There are two studies which show that these differences in disease susceptibility can be traced largely to differences at the genetic level directing the way the immune systems of people with European and African ancestry respond. Racial and ethnic areas of the world have already marked. Here is need to prepare separate copping plans on the bases of races and ethnicity for whole world.
- 5.8 The hygiene hypothesis, however, is more than just about how sanitized modern households have grown. Kids come into contact with microbes in a variety of ways, including contact with family members and animals just being outdoors. Your mom probably scolded you for playing in the dirt, but doing so may be healthy. Studies confirmed that kids have more white blood cells because they had a greater exposure to microbes, which boosts their immune system. India is a developing country and more than 833 million (68.84%) live in rural areas. Consequently Indian has strong immune system in comparison to western mechanised world. Modern restrictions make us more vulnerable to various types of viral diseases. In some extant we should allow our coming generation to play traditional Indian games at all platforms.
- 5.9 In China and many South East Asian countries, close contacts between humans and food animals have resulted in the transmission of many microbes from animals to humans. The two most notable infectious diseases in recent years are severe acute respiratory syndrome (SARS) and avian influenza (H7N4). In this review, these two severe zoonotic viral infections transmitted by the respiratory route, with pandemic potential, are used as models to illustrate the role of Chinese wet-markets in their emergence, amplification and dissemination. The world health organisation should ask the question from Chinese authorities in this regard. And they should issue precautionary guidelines for them. This is very much necessary for the safety of mankind on this planet. Suitable precautionary steps should be taken in the wet markets of the world to check the further human spread of these types of viruses.

## 6. Conclusion

A Horrible and Disastrous pandemic of the 21<sup>st</sup> century Originated from WUHAN and spreading all over the world pandemically, challenging and threatening all the human advancement. In November 2019 first case was reported in Wuhan and the counting is still on. Wuhan city is a hub



of Education, Scientific Research, Tourism and Industry. All hot spots of corona virus are situated in Humid Subtropical climate. With onset of spring equinox areas shifted northward and continue. Numerous factors like climate, location and latitudinal extent, Immigration and migration rate and trend, anthropogenic factors, Tourist places, Cultural cohesion, Ethnic and racial traits, Demographic composition, weak immunity, population density, wet markets, food habits and close contact with animals are mainly responsible for the chain spread of COVID-19. Now more than 200 countries of the world are fighting against deadly pandemic. A regional spread of corona virus converted in to world pandemic. The various techniques have identified and recommended for adoption, to check the spread of COVID-19 in the world. Lockdown and Quarantine to restrict community spread, checks on migration immigration and tourist inflow, identification of racial ethnic zones, extra precautionary guidelines for elderly people, large scale screening of the people, sanitization, social distancing to defuse various social cultural attribute, ventilation and medical testing to sustaining the disease to recovery etc. Same time nature nurture a natural cure, geomorphic features and availability of microbes, role of physical barriers as natural lockdown, Benefits of Dirt -The hygiene hypothesis that improve the immunity, ethnic and racial communities and their immunity, demographic composition higher elderly population countries have high corona deaths, wet markets requires the imposition of strict laws and climatic differences are playing important indirect role to restrict the spread in some extent. Above mention precautionary measures are here properly justified and enabled to solve the problem. The high magnitude of virus spread areas are to be identified and suitable disaster risk reduction plan should be prepared accordingly. Plan should be prepare on regional to national or international level. Rapid response and lockdown system should be adopted to restrict corona spread amongst community. This is a biological fission and needed a solid and concrete risk reduction plan to tackle in present and future. A blueprint of risk reduction and safety is necessary to protect mankind on this planet. Every life is important and should be saved.

## 7. Future Scope

There are numerous future scopes available in this research. Many geo anthropogenic fields are here covered needs more intensive investigation in future. Geomorphic land features having nature nurture capacities attract more intensive study. Benefits of Dirt -The hygiene hypothesis that improve the immunity need more justification, more work is needed to identify the ethnic and racial communities of the world and their location in world and how their ethnic differences affect their immunity. Demographic composition of the world needs more attention and there is necessity to identify the problems related to increasing elderly population in number of countries. Wet market their studies are urgently required. Many time these markets become the cause of pandemic spread. COVID-19 virus changes the various parameters of social life and it hampered the economies of the world. Here is need to study their impacts on social economic lives of the people of different countries. There is a necessity to encourage research work in this regard and

geophysical features should be identified that have the natural capacities.

## 8. Suggestions/ Precautions

- a) The COVID- 19 is originated as Geo identical virus and initially confined to some specific climatic and environmental conditions; its spread is mainly associated with sub tropical humid climate. Originated at 29° latitude WUHAN and shifted northward around the globe with onset of spring equinox.
- b) Various natural and physical barriers have restricted or delay the spread of COVID-19. Those delays help the concern authorities to prepare for viral disaster. India and many other countries of the world got this benefit. And same time islands surrounded by water have its own natural lockdown. Numerous countries of the world are blessed with this benefit. All depends on the efficiencies of concern authorities and Governments.
- c) Spread in specific latitudes extended to north with advancement of spring equinox and continued in summer solstice. There is Probability of its spread in higher latitudes with advancement of summer and fear of its spread in southern hemisphere with the onset of winter season in south. People of these areas should take more precautions in coming days.
- d) Large scale Immigration and migration should be checked in coming times mainly in western countries or intercontinental. The top five tourist countries are the worst affected one. So there is a necessity to scan tourist inflow to check further spread.
- e) At present there is no availability of medicine for the treatment of COVID-19. Only one approved technique is social distancing. This is evidently advised to adhere to social distancing to prevent community spread. India and many other countries have proved this by implying the lockdown and quarantine up to 14 days and more.
- f) This is scientifically approved, that there are some identical human races that have genetically weak immune system and are the admixture of different races. The People of these races are worst affected and advised to take more precaution for their safety.
- g) The epicentres or hot spot countries of the world have not pyramided age composition. They have huge elderly population. This is proved that due to weak immune system this section of society is more vulnerable. So, extra precautions should be taken for the safety of elderly persons.
- h) To make future generations safer to these viruses, parents are advised to allow their children to play with dirt or dirt induced games like tradition Indian kabbadi, wrestling and many more. These activities improve their immunity.
- i) China is responsible for the spread of numerous viral diseases. Numerous zoonotic viral spreads are reported from china. A 57 year old WUHAN shrimp seller identified as 'patient zero' for COVID-19. Extra precaution should be taken in this regard. Strict precautionary measure should be imposing on meat/wet markets. The world health organisation should ask the question from Chinese authorities in this regard. And they should issue precautionary guidelines for them.

This is very much necessary for the safety of mankind on this planet.

- j) World health organisation is doing well but initially china has not given the proper information regarding the onset of COVID-19. China has imposed lockdown in epicentres but international migration and immigration was not stopped/screened. In short China is directly or indirectly responsible for the globally spread of COVID-19. Now more than 200 countries of the world are fighting against this pandemic.
- k) There is a necessity to encourage research work in this regard and geophysical features should be identified that have the natural capacities.
- l) Over populated areas of the world have high magnitude of virus spread and these areas are to be identified and disaster risk reduction plan should be prepared accordingly in future. Plan should be prepared on regional to national or international level. Rapid response and lockdown system should be developed to tackle viral pandemic in future

#### Suggested reading

1. (4.10) Ethnic traits. It's long been clear that people from different parts of the world differ in their susceptibility to developing infections as well as chronic inflammatory and autoimmune diseases. Now, two studies reported in *Cell* on October 20 show that those differences in disease susceptibility can be traced in large part to differences at the genetic level directing the way the immune systems of people with European and African ancestry are put together.

The researchers also found that differences between populations have been selected for over time because they conferred advantages to people facing distinct health challenges in the places where they lived. As a result, according to the new evidence, people of African ancestry generally show stronger immune responses than Europeans do.

The discovery suggests that European populations have been selected to display reduced immune responses since our ancestors first made their way out of Africa. Intriguingly, the immune systems of Europeans were partly shaped by the introduction of new genetic variants through interbreeding between some of our early European ancestors and Neanderthals.

The researchers found strong evidence of selection on genes that control the immune response. Their evidence also shows that Europeans "borrowed" some key regulatory variants from Neanderthals, which in particular affect the way their immune systems respond to viral challenges.

Barreiro and colleagues took a similar approach to test for the effects of African versus European ancestry on changes in the activity of immune cells. His group focused on another type of immune cell known as primary macrophages and their response to live bacterial pathogens.

In many cases, the activity of particular genes was tied to a single genetic variant, with strong differences in frequency between European and African populations. The researchers also observed the signature of past selection on those genes and additional evidence for an important role of genetic

variants passed on to modern humans from Neanderthals. "This strongly suggests that a diminished inflammatory response has conferred a selective advantage to European populations," Quintana-Murci said. "The genetic and molecular basis of ancestry-related differences in disease susceptibility has been a mystery," Barreiro said. "These results provide a first description of differences in immune response and associated genetic basis that might explain differences in susceptibility to disease between people of African and European ancestry. More generally, our results demonstrate how historical selective events continue to shape human phenotypic diversity today, including for traits that are key to controlling infection."

2. (4.12) Nature-nurture Angela Rome correspondent Mon 30 Mar 2020 11.48 BST Last modified on Mon 30 Mar 2020 12.35 BST The countryside around Montaldo Torinese The inhabitants of Montaldo Torinese, a village in Italy's northern Piedmont region, have so far been spared corona virus, leading some to believe they are being protected by the "miracle water" that, according to legend, cured Napoleon Bonaparte's troops of pneumonia. Montaldo Torinese lies about 11 miles (19km) from Turin, the regional capital where as of Saturday 3,658 people were infected with the virus. Across Piedmont, the fourth worst-affected region in *Italy*, there were 8,206 cases as of Sunday. The water from the well in Montaldo Torinese, a village of 720 inhabitants, is believed to have helped cure Napoleon's troops, who had set up camp in the village in June 1800 before a battle in nearby Marengo.



The water from the well in Montaldo Torinese, a village of 720 inhabitants, is believed to have helped cure Napoleon's troops, who had set up camp in the village in June 1800 before a battle in nearby Marengo.

"According to tradition, Napoleon's generals were sick with pneumonia," Sergio Gaiotti, the mayor of Montaldo Torinese, told the Guardian. "And thanks to the clean air and pristine countryside, but also this well, they were cured. During that period, the water probably did help. But today, the well is closed and its water used only to irrigate the fields. You can't drink from it." Napoleon and his troops went on to win the battle against Austrian forces at Marengo. Montaldo Torinese has a large elderly population, but it is also home to young families, with people commuting to Turin for work.

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Pneumonia of unknown cause detected in Wuhan, China was first reported to the WHO Country Office in China on 31 December 2019. WHO is working 24/7 to analyse data, provide advice, coordinate with partners, help countries prepare, increase supplies and manage expert networks. The outbreak was declared a Public Health Emergency of International Concern on 30 January 2020. The international community has asked for US\$675 million to help protect states with weaker health systems as part of its Strategic Preparedness and Response Plan. On 11 February 2020, WHO announced a name for the new corona virus disease: COVID-19

**List of virus spread (WHO Emergencies preparedness, response Disease Outbreak News (DONs) Disease outbreaks by countries, territories and area China)**

- 1) 12 January 2020, Novel Corona virus – China
- 2) 5 January 2020, Pneumonia of unknown cause – China
- 3) 22 February 2018, Human infection with avian influenza A(H7N4) virus – China
- 4) 3 January to 26 October 2017, Human infection with avian influenza A(H7N9) virus – China update 1 to 24
- 5) 26 April to 23 December 2016, Human infection with avian influenza A(H7N9) virus – China update 1 to 14

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- 6) 29 March to 22 April 2016, Yellow Fever – China update 1 to 3
- 7) 4 January to 29 March 2016, Human infection with avian influenza A(H5N6) virus – China update 1 to 9
- 8) 19 January to 17 December 2015, Human infection with avian influenza A(H7N9) virus – China update 1 to 15
- 9) 6 January to 30 December 2014, Human infection with avian influenza A(H7N9) virus – China update 1 to 65
- 10) 1 April to 17 December 2013, Human infection with avian influenza A(H7N9) virus – update 1 to 36
- 11) 5 June 2012, Avian influenza - situation in China, Hong Kong Special Administrative Region (Hong Kong, SAR) - update
- 12) 1 September 2011, Wild poliovirus confirmed in China
- 13) 19 November 2010, Avian influenza – situation in China, Hong Kong Special Administrative Region (Hong Kong, SAR)
- 14) 11 August 2009, Plague in China
- 15) 2 February 2009, Avian influenza – situation in China - update 1 to 4
- 16) 1 May 2008, Enterovirus in China
- 17) 22 February 2008, Avian influenza – situation in China – update 1 to 2
- 18) 9 December 2007, Avian influenza – situation in China – update 1 to 5
- 19) 19 January 2006 to 14 August 2006, Avian influenza – situation in China – update 1 to 14
- 20) 29 November 2005, Avian influenza – situation in Indonesia, China – update 441
- 21) 18 August 2005, Geographical spread of H5N1 avian influenza in birds - update 28  
Situation assessment and implications for human health
- 22) 3 August 2005, Outbreak associated with *Streptococcus suis* in pigs in China
- 23) 20 August 2004, Avian influenza: H5N1 detected in pigs in China
- 24) 30 July 2004, Avian Influenza - Assessment of the current situation
- 25) 18 May 2004, China's latest SARS outbreak has been contained, but biosafety concerns remain – Update 1 to 7
- 26) 11 February 2004, Avian influenza A(H5N1) - update 21: Global surveillance guidelines, Investigation of possible human-to-human transmission: data on second sister in family cluster in Viet Nam
- 27) 2 February 2004, Avian influenza A(H5N1) - update 15: Additional confirmed human case in Thailand; China announces suspected spread of infection in poultry; investigation of possible human-to-human transmission
- 28) 30 January 2004, Avian influenza A(H5N1) - update 13: China confirms spread of infection in poultry, Development of an H5N1 vaccine for humans: need for samples and viruses, Protection of workers involved in culling operations
- 29) 27 January 2004, Avian influenza A(H5N1) in China - update 10
- 30) 10 December 2003 Influenza A(H9N2) in Hong Kong Special Administrative Region of China (SAR)
- 31) 28 July, 2003 Influenza in Hong Kong, Special Administrative Region of China
- 32) 26 June, 2003 Severe Acute Respiratory Syndrome (SARS) - multi-country outbreak – Update 1-95
- 33) 11 February, 2003 Acute respiratory syndrome in China
- 34) 8 February, 2002, 2002 - Isolation of H5 viruses in poultry in Hong Kong Special Administrative Region of China
- 35) 17 May 2001, 2001 - Isolation of influenza A (H5N1) virus in poultry in Hong Kong Special Administrative Region of China

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