

Pandemics Throughout History and Their Effects on Society Life

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Abstract

One of the important factors to be considered in the explanation and interpretation of history is pandemic diseases. The nature of the pandemic diseases, ways of prevention and treatments are not fully known for a long time. People saw the disease as a wrath of God until they learned the nature of the epidemic, and often placed a blessing on it. Many diseases with an endemic, epidemic and pandemic character have been experienced since ancient times and millions of people have died in these outbreaks. Plague, malaria, cholera, yellow fever, smallpox, influenza, tuberculosis, typhoid, typhus and syphilis are important epidemic diseases that cause mass death. However, all of these could not produce outbreaks while would affect several continents of the world. We can only say that plague, cholera and influenza diseases are pandemic epidemics and that affect people globally known. The world has experienced from antiquity to the present, more than ten influenza pandemics with three plagues, seven cholera, and the outbreak we are experiencing today. Epidemic outbreaks of smallpox, malaria and yellow fever which caused the death of many people, were at least as effective as these three diseases.

The reason for the high destruction of all pandemics is that the disease is not fully recognized. Therefore, the mortality rates were high, and the spreading areas were wide. Epidemics/pandemics deeply affected social life economically, socially, psychologically, culturally, politically, religiously, geographically and many more.

Keywords

pandemic, plague, cholera, influenza/flu, pandemics in history, pandemic and society

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Introduction

One of the important factors to be considered in the explanation and interpretation of history is epidemic diseases. The nature of the epidemic diseases, ways of prevention and treatments are not fully known for a long time. People saw the disease as a wrath of God until they learned the nature of the epidemic, and often placed a blessing on it. Many epidemic diseases with an endemic, epidemic and pandemic character have been experienced since ancient times and millions of people have died in these outbreaks. Plague, malaria, cholera, yellow fever, smallpox, influenza, tuberculosis, typhoid, typhus, and syphilis are important epidemic diseases that cause mass death. However, all of these could not produce outbreaks while would affect several continents of the world. We can only say that plague, cholera, and influenza diseases are pandemic epidemics and that affect people globally known. The world has experienced from antiquity to the present, more than ten influenza pandemics with three plagues, seven cholera, and the outbreak we are experiencing today. Epidemic outbreaks of smallpox, malaria and yellow fever which caused the death of many people, were at least as effective as these three diseases.

The reason for the high destruction of all pandemics is that the disease is not fully recognized. Therefore, the mortality rates were high, and the spreading areas were wide. Pandemics has deeply affected social life economically, socially, psychologically, culturally, politically, religiously, geographically and many more aspects.

As epidemics are a biological phenomenon, they are as old as human history and microorganisms causing diseases are older than human history. Microorganisms such as bacteria, viruses, fungi, algae, and protozoon affect human life in a beneficial and harmful way depending on the environment and natural conditions. Microorganisms, which are the source of epidemic diseases that cause mass death of people, have not been recognized for a very long

time because they are too small to be seen. The existence of microorganisms is accepted only in theory, suggesting that air pollution may be the cause of diseases. Often, a holy characteristic could be attributed to diseases and they are perceived as a punishment from God.

Hippocrates (460-380 / 375 BC), the famous physician of antiquity, revealed the understanding of medicine based on reason and experience, in contrast to the traditional religious-magic (magical) measures practiced in previous periods. According to him, medicine was a divine art, and physicians benefited from the gods and took advantage of the power of nature. Many scientists from the Islamic world have guided the clinical observer side of Hippocrates. Many of his Hippocratic works have been translated into Arabic with Galen (Câlinûs) annotations (Kahya, 1998: 120). Hippocrates linked all kinds of diseases, whether contagious or not, to the imbalance of the four fluids (humor) in the body (humoral theory). These fluids were bile, black bile, sputum, and blood. The Islamic world has named them *Ahlat-ı Erbaa* (four trees). According to the theory, if these four fluids are balanced in the human body, a healthy body will be obtained, and if these fluids are unstable, the disease will occur. The most important factors of whether these fluids are balanced in the body are the winds and water. This theory, called Miasma (Miyazma) theory, pointed to physical and moral pollution, but also brought the relationship between epidemic disease and environment. For this reason, sick people were sent to different places far from water and wind, which disrupted their order. While this theory was essentially wrong, it could sometimes work randomly. Because avoiding swamps and static waters could be a preventive and protective measure for malaria. Exiting a crowded city and living in a coastal town where beautiful breezes were blowing, it was good for some diseases (Bauer, 2006: 19).

While investigating the causes of plague epidemics that occur one after another in the medieval world, theses based on the theories of Hippocrates have been proposed. Ibn Sinâ (980 / 981-1037) reconsidered, completed and disseminated the theories that Hippocrates and Galen had prepared in the ancient Roman world (Panzac, 1997: 154). He defined *Ahlat-ı Erbaa* as blood, bile, sputum, and love. Ibn Sina, stating that the plague spread from carrier mice with mouse mice, wrote that the plague epidemic started in this way (Erdemir, 2018: 204). Ibn Khaldun (1332-1406) pointed out that the deterioration of the air causes epidemic diseases thus applying a close view to that of Ibn Sina (İbni Haldun, 1954: 128).

The countries most affected by the Black Death plague pandemic in 1346-1352 were in Western Europe and the Western Mediterranean. Muslim scientists in Andalusia produced some works with the effect of this devastating epidemic. Max Meyerhof, who translated the Arabic work of Ibn al-Hatib (1313-1374) into German, stated that these booklets about the plague were much more advanced than those written in Europe in the 14-16th centuries. In his work *Muknî'ât es-Sâ'il 'an el-Marad el-Hâ'il*, Ibn al-Hatib concluded that those who come into contact with the people who are infected will surely catch the plague and die (Sezgin, 2015: 57).

Eşref bin Muhammed, one of the 15th century Turkish scholars, also adopted the views of Ibn Sinâ and attributed the cause of the epidemic to the poisonous air (Eşref bin Muhammed, 1961: 34).

In the 19th century western world, theses close to the views of Ibn Khaldun began to be proposed about how epidemics emerged and spread. Many diseases, such as smallpox, caused people to die, but there was no clear idea of how they spread. Many people believed that epidemic diseases were caused by invisible dirty air, called myiasis. For this reason, members of the middle class were protesting about overcrowded slum areas and wanted to be protected from dirty myiasis clouds in this way (Fara, 2012: 350). Louis Pasteur's works in the 19th century proved the theory of microbes and it was understood that infectious diseases were spread by viruses, which were invisibly small.

There are many factors that cause the emergence of epidemics. Failure to comply with the rules of hygiene, unhealthy environments caused by the lifestyles of people after passing to settled life, deterioration of ecological balance, famines, natural disasters and weakening of people's immune systems for any reason are the first reasons that come to mind.

Communities engaged in hunting and gathering before farming were less likely to develop any epidemic disease because viruses or bacteria with diseases needed a large population of people to survive and reproduce. Hunter and gatherer groups were certainly not suitable for this. These groups were affected by worms, parasites or infections passed on from the animals they hunted and caught an infectious tropical disease and malaria, called *yaws* (*frambesia*), causing wounds on the skin. However, it was difficult for the diseases to become deeply rooted as they were constantly displaced and lived in small groups. The transition to settled life brought many factors that facilitate the emergence of diseases. Houses, food hiding, and accumulated garbage led to the emergence of insects that live close to man. The role of fleas, mosquitoes, and mice in pests in this pest is undeniable. When human waste accumulated in a tremendous way, it increased water pollution and all these developments caused the spread of diseases. The water around the open fields and the houses created suitable environments for mosquitoes and malaria appeared. Water channels were suitable breeding sites for snails carrying bacterial disease in Egypt in 1200s and they finally reached in Mesopotamia. People started to live closer to animals and even stayed in the same place in the countryside in winter. As a result, animal-specific diseases mutated and became a deadly threat to humans. Almost all the epidemic or non-epidemic diseases that people are exposed to are of animal origin. Measles disease is related to the *rinderpest* (cattle plague) in cattle and possibly the *distemper* in dogs. Smallpox originates from cows or other animals that carry relative flower viruses. The source of diphtheria is cows, and the origin of the flu is pigs, ducks, and chickens. The source of tuberculosis is cattle. Regular cold is a disease that passes from horses. The source of typhus is essentially mouse fleas and then squirrels (Diamond, 2013: 266-269; Pointing, 2011: 57; Porter, 2016: 20).

Epidemic diseases are classified according to their spreading areas and the number of people they affect. Diseases that catch the animals of a single place or business continuously or from time to time are called *narrow epidemics*. The spread of the disease from the place of occurrence and its emergence in another place is called *andemia / endemia*. If the disease is seen more than usual in a certain region or several countries, it is called epidemic, and in case of continental or global spread, it is called *pandemia / pandemic* (Dols M., 1979b: 181).

Pandemic Diseases in History: Terminology and Scope

The most problematic aspect of epidemic diseases in history is the systematics and names of epidemic diseases. The disease called *henkan* in Hittites was considered as a general name of epidemic diseases since its symptoms were unknown (Dinçol, 1985: 10). It is also suggested that *henkan* was used to refer to plague, typhoid, or cholera disease (Koç, 2006: 52). It is understood that the Islamic world was at a more advanced level than the western society about the systematic of diseases. Bars (white leprosy), leprosy, cudri (smallpox), hasaba (measles) (Altun, 1996: 140-141) and hamra (a kind of plague) diseases were known in the city of Mecca in the 7-8th centuries (Hijri first century) (İbn Mace, 2224-2225).

Although these diseases were known in the Islamic world, all the epidemic diseases that caused the death of people in a short time were called as *ta'un* or *waba* (plague/Black Death) in the Islamic and Christian world. This was also the case in the context of the Ottoman society. Especially, the plague and malaria diseases were mixed many times. In one of her letters, written in 1717, Lady Montaqu stated that mostly mentioned plague in the Ottoman society was fever (malaria) (Montaqu, 2004: 56). This situation became so complex that sometimes the terms plague and fever were used together. For example, Nâimâ Mustafa Efendi used the term *humma-yı vebâ'îyye* for a disease that could become fatal in a short time somewhere in his work (Nâimâ Mustafa Efendi, 2007: 1693).

Theoretically, *ta'un* (plague) specifically means bubonic plague. *Wâbâ/ (veba/ plague)* was generally used for all epidemic diseases. Both words come from Arabic. It is even noted that some historians who write in Arabic say “every *ta'un* is a *wâbâ*, but every *wâbâ* is not a *ta'un*”. Although Ottoman sources consider this distinction theoretically, we can say that they use both words synonymously in practice (Varlık, 2017: 30).

The epidemics that affect people most throughout the history are specifically plague, smallpox, yellow fever, typhoid fever, malaria, syphilis, cholera, tuberculosis, typhus, measles, and flu. Some of these diseases have not been able to spread globally. Because the environments that are necessary for their transmission, spread and reproduction of microorganisms causing diseases are different. Stagnant water from which mosquitoes, which are carriers of the malaria microbe, will reproduce and a suitable climate was required. The situation is different for the syphilis microbe. Because for syphilis to pass from person to

person, there must be skin contact or sexual intercourse. Although infectious diseases such as malaria, smallpox, syphilis, leprosy, tuberculosis, typhoid, and typhus caused the death of many people, they did not show a pandemic feature. Global epidemics in history are plague, cholera, and flu.

This study aims to provide a concise evaluation on the course of pandemics, their effects on human and social life as well as analyzing their consequences. In this regard, the biological and medical causes, precautions, and treatment methods of epidemic harvests are not addressed in order not to move away from the main subject.

Waba/Plague

Plague has a special place in epidemics encountered throughout history. From ancient times until the end of the 19th century, endemic, epidemic and pandemic often showed their toll and caused the death of a large number of people. Plague is called *waba* and *ta'un* in the Islamic world while it is usually referred to as *Black Death*, or *Black Plague* in the Western world. In addition, in different languages it is also called *plague*, *peste*, *pestis*, *pastilentia*. It originates from a bacterial infection called *Yersinia pestis*. Those who got the disease before their treatment were lost in a short time. There are two different types of Plague. These are bubonic (bubun / bubonik) and lung plague (pneumonic plague). While the mortality rate in bubonic plague is 50-70%, this rate is over 90% in the lung plague. It is claimed that plague bacteria are destroyed and lose their effectiveness at temperatures of 38 degrees (100 degrees Fahrenheit) or less (Payne, 1889: 4).

There is a widespread belief that many epidemic diseases that emerged since ancient times originated in Egypt. The vulnerable position of Egypt at the intersection of pilgrimage and trade routes has made it the focus of a plague or epidemic spread. In regard to the plague, Egypt was not merely an endemic focal point. However, it was in a sensitive position because it had favorable conditions for the outbreak (Ali ibn Ridwan, 1984: 53).

Our first written information about the Plague goes back 4000 years ago. In the Gilgamesh Epic, which was presumably written on the tablets by the Sumerians in the BC-2000s, there were expressions that "... it would have been better if the Plague God would have gotten up and infested people, rather than what you did!" (Gilgamesh Destanı, 2001: 86-87). The Hittites had a god for plague named Şulinkatte as well as famous prayers to be protected from plague. The death of 2nd Suppiluliuma, considered as the biggest king of the Hittites, in BC 1335, due to this disease and the death of his eldest son, 2nd Arnuvanda, who died a few years later after taking the throne, shows that plague disease was widespread in this period. Indeed, his second son, 2nd Muṣṣiliş, who replaced 2nd Arnuvanda, thought that the gods who were angry at his father had punished him and his brother because of his father killing his third niece Tuthaliya to take the throne and he wrote his famous plague prayers consisting of 4 different tablets (Alparslan, 2006: 127-129). In Tekvin/Genesis (12), known as the

first book of the Torah, it is claimed that Pharaoh's possession of Abram's wife, Saray, caused a divine curse. Pharaoh and all the people in the palace suffered from a disease called *neh-ga*. Since this disease caused cheesy flowing wounds, it was suggested that this was kindly called plague in translations (Bauer, 2013: 155). It is also mentioned in the verses about some past tribes that the plague is a frightening and lethal disease in the Qur'an (Kur'an-ı Kerim: Bakara/243). This verse was interpreted by referring to the plague, and sometimes the consequences of the plague's deaths of 70 thousand people from the Israelites of the plague are mentioned (Taberî, 1991: 626-627).

The first expressions found in historical sources about epidemics are on the epidemic during the *Peleponnes Wars*, which took place between the Spartans and the Athenians in BC 430. The disease probably came from Egypt with fleas carried by overcrowded ships and mice (Diakov, 2014: 372). It spread rapidly among the people in Athens and for two years (430-429 BC), it took its toll rigorously for two years and even Pericles, one of the most important statesmen, died. Two years later, the disease came back and 1/3 of the people of Attica died between BC 427-426 (Mansel, 1995: 321; Tekin, 1998: 82, 84). There are also discussions about whether this disease, which is mentioned as plague in many sources, was a plague. In the reports about the plague histories written in the last quarter of the century, the possibility of the disease being a plague has been considered as low given the medical character of this disease of that day and it was argued that it would not be correct to say anything definitive (Payne, 1889: 6).

We can trace the presence of plague outbreaks at the endemic scale up to 542 Justinian plagues, which is the first plague pandemic in history. The bust called *Charnion/Horon* carved into the rocks near the famous St. Pierre Church, 2 km east of Antakya, was built during the IV Antiochus period to stop the deaths and protect the city against the plague during the BC 2nd century plague (Sahillioglu, 1991: 229). In addition, in BC 23, AD 65 and 79, Rome suffered a fatal plague (Mumford, 2007: 276).

The epidemic that emerged in the Mediterranean between the years of 165-180 and identified as the Plague of Antonine killed approximately 1/3 of the population of the Roman Empire, or five million people. It is noted that military troops, sent to the east under the command of Antoninus Verus to Rome, who fought with the Partians and returned in 166, brought the disease (Freeman, 2003: 542). Eutropius, a Roman historian and statesman who lived in the 4th century, noted that after the victory against the Partians in the history of Rome he wrote in summary, almost all of the people and military units died from this disease (Eutropius, 2007: 211). There are also estimates that this disease, which is considered as the first plague epidemic in history, might be measles and smallpox. The author used the word *pastilentia* for the disease in question. This word is used in Latin to refer to waba / ta'un or infectious/epidemic disease. In this regard, it is also necessary to take into account the predictions that there may be smallpox or measles. In the continuation of this

epidemic, the Romans continued to fight with the Partians since 193, but after the plague broke through, hundred thousand people were sold as slaves by auction (Ribard, 1974: 243).

The first major plague pandemic known in the world in terms of its results and effect is an epidemic known as *Justinian Plague*. It was named after the Byzantine emperor who lived in the 1st Justinian period (527-565). Justinian Plague is one of the three great plague pandemics that world history has seen. The origin of the outbreak is not fully known. There are opinions that the disease spread from the ancient city of Pelusium in 541 Egypt (Akdere, 2018: 318) or it is of Asian origin (Varlık, 2015: 146-147). North Africa, Europe, Central and South Asia were the most affected regions and it was claimed that approximately 50-60% of the population there died. The epidemic, which reached Istanbul in the middle of the spring of 542, continued its effect here for four months. In this process, although exaggerated death figures such as 244-300 thousand are given, it can be said that approximately 80 thousand people lost their lives. This number corresponded to 20% of the Istanbul population at that time (Akdere, 2018: 318-319; Varlık, 2015: 147).

The epidemic affected different parts of the world periodically until the middle of the 8th century. Incidences of plague epidemics were recorded in Istanbul in 558, 573-574, 599, 618-619, 698, 747-748 (Varlık, 2015: 147). Throughout this pandemic process, the disease appears to have recurred approximately every ten years.

Endemic and epidemic plague outbreaks continued in Europe, the Middle East, Anatolia, Asia and North Africa until the second plague pandemic called *Black Death*. We can say that especially Egypt, Syria and Anatolia geography were important plague foci until the second pandemic (Arık, 1990-1991; Gökhan, 1998; Kılıç, 2004: 22-28; Subaşı, 2005).

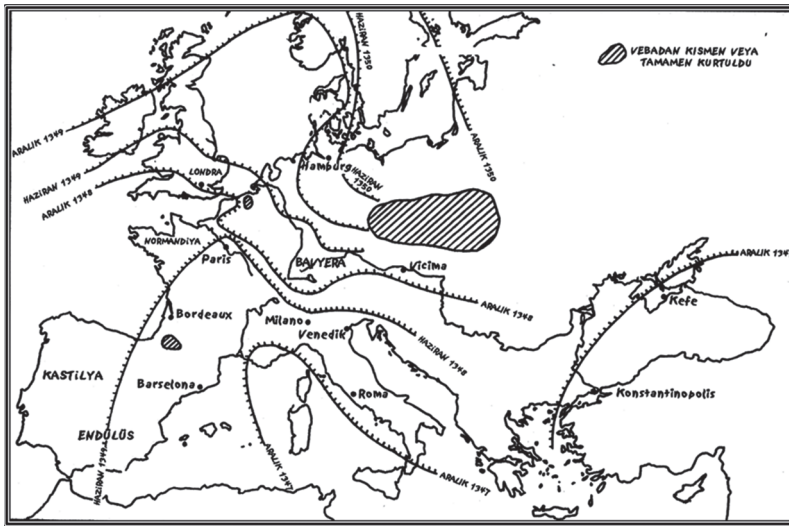
The story of the second plague pandemic emerging in Europe since 1346 started in China in 1331. It was seen in Nasturi merchants in Issyk Lake in Central Asia in 1338, and reached Kefe, the trade colony of the Genoese in Crimea in 1346. It was probably brought here by the Mongols, who surrounded the city.

There is an opinion that the 1346-1352 plague pandemic originates from Central Asia and not in China. The basis of these views is that hundreds of tombstones in a lost village under Issık Lake are dated 1338-1339. On one of these stones, it says "This is the tomb of Kutluk, who died from the epidemic with his wife". Another issue discussed is that the disease is not a bubonic plague caused by the bacteria called *Yersinia pestis*. Some minority scientists have argued that this epidemic may be anthrax, hemorrhagic fever, typhus, or a group of infectious diseases (Bauer, 2014b: 560).

The epidemic extended to Istanbul, Sicily, and Egypt after Kefe and reached Southern France in 1347 and Northern France and South England in 1348.

Then, it made its way to the north, turning Greenland, and then turning east, to influence Moscow in December 1350. The route of Black Death's transition to Europe was from the north of the Black Sea to the Mediterranean. However, there was another route that moved over Tbilisi, then divided into two branches and passed to Mesopotamia and Egypt. Using these routes, it spread to almost all of India, Iran, Caucasus, Russia, Anatolia, Iraq, Syria, Egypt, North Africa, Arabia, Mediterranean Islands and Europe, and its effect between the years 1346-1350 was terrible in Europe, Egypt and Levant. The reason for the spread of the disease so fast was undoubtedly the rats carrying fleas. However, sick people escaping from the epidemic also accelerated the spread. When the disease was transmitted through coughing and sneezing, that is, pneumonic, it was almost a hundred percent fatal. When it was transmitted by fleas, that is, bubonic, its fatality was less than two thirds. The plague destroyed a third of the European population in just four years (Dols M., 1979a: 35; Nikiforuk, 2001: 71; Pointing, 2011: 419-420).

Map 1. Spread of Black Death in Europe (1347-1352)



Kaynak: (Pointing, 2011: 418)

Pope VI Clemens' dead counters reported that 23,840,000 people died during the Black Death. China was probably not included in this figure. In China, it was recorded that approximately 13 million people lost their lives. Many people died in Cairo, India, Crimea, Mesopotamia, Syria, Karaman, Kayserya, Aleppo and Cyprus outside Europe. The Island of Cyprus almost lost all its inhabitants. During the epidemic, 22 thousand people died in Aleppo (Hecker, 1859: 21).

J.F.C. Hecker did not find these deaths reported to Pope VI Clemens very realistic, but because of his evaluations about deaths in Europe, he gave the following numbers which he finds more reliable:

Table 1. Black Death and Death Tolls in some European Provinces (1348-1351)

Province	Death Toll
Florence	60.000
Venice	100.000
Marseilles	16.000 (in 1 month)
Siena	70.000
Paris	50.000
St. Denys	14.000
Avignon	60.000
Strasburg	16.000
Lubeck	9.000
Basel	14.000
Erfurt	16.000 (at least)
Weimar	5.000
Limburg	2.500
London	100.000 (at least)
Norway	51.100

Hecker states that 124,434 Franciscan priests who died in Germany and 30,000 minorities in Italy could be added to these figures. According to him, almost all the inhabitants of towns and villages in small countries, whose names are not mentioned here, and whose population is not more than 200 thousand, have lost their lives. Probably 1,244,434 people died in Germany. During the epidemic, many houses remained empty and ruined. The Pope in Avignon blessed the Rhone River when he saw that it was impossible to bury the corpses and announced that the bodies could be thrown into the river without delay. Extraordinary measures were taken to quickly remove the bodies, buried in mass graves in Cairo, Paris, and Vienna, outside the cities. In some places, it was even reported that some of the patients were buried before they died in a hurry. After the cemeteries were filled in Erfurt, 12 thousand bodies were buried in eleven large pits. Mass grave practice was seen in almost every city. Italy had the largest loss in the outbreak of epidemic. Half of Italy's population died in Black Death. When 3/4 of Venice's population died, the city was abandoned for a while and left uninhabited. 1/3 of Padua's inhabitants were able to survive. It was forbidden to publish the number of deaths and to ring bells at funerals so that those who survived in Florence were not despaired. For England, the picture was also very scary. Here too, the bodies had to be buried in a row. 50 thousand corpses were buried in a pit in London in a row (Hecker, 1859: 22-24).

Although the plague epidemic was not as devastating as in the period of 1346-1352, it continued and had an impact in the following years. Between the years 1347 and 1536, epidemics of plague occurred on average of every 11 years, and in the following 150 years on an average of every 15 years. Half the population of Northern Spain died in the plague epidemic in Spain in 1596 (Point-

ing, 2011: 419-420). Severe plague outbreaks occurred in England in 1506, 1517, 1528-1529, and 1551 (Hecker, 1859: 179-184), in Naples and Rome in 1525, in Milan in 1550, in Venice in 1575-1577 and in Messina in 1575-1580. In 1580, an animal disease called *Del Montene* or *Castrone*, which surrounded all of Italy, emerged and threatened human health in several outbreaks. 60 thousand people died in the outbreak in Rome in 1581. In the outbreak of Milan in the same year, only 5,000 people survived in the city. Great plague epidemics occurred in Europe in the 17th century; in 1630 in Milan and Verona, in 1630-1631 in Florence, in 1631 in Venice, in 1656 in Genoa, in 1664-1665 in London (Braudel, 1989: 221-222; Dols M., 1979b: 165; Flinn, 1987). The London epidemic of 1664-1665 was the last plague epidemic in England. Plague did not stop in Ireland after the epidemic of 1651-1652 (Payne, 1889: 14). The Marseille epidemic in 1721 had its main effect in Southwest Asia and Egypt (Pointing, 2011: 419-420).

Plague epidemics naturally affected the Ottoman geography in the 14-18th centuries. Istanbul, Egypt, Wallachia-Balkans, the Balkans, Anatolia and Iraq-i Arab were the major plague focal points (Kılıç, 2004: 43-62; Kılıç, 2016; Varlık, 2017; Lowry, 2003; Panzac, 1997; Varlık, 2017).

Although plague outbreaks diminished their impact in England and Western Europe after the mid-17th century, Russia, the Danube basin, Istanbul and Egypt had to deal with outbreaks for a while. The last plague epidemic in Istanbul occurred in 1841 and in Egypt in 1845 (Payne, 1889: 14). Since the second half of the 19th century, a great reduction in plague outbreaks has been observed. This situation followed the same course in the Ottoman Empire and replaced the plague with cholera (Panzac, 1997: 1).

The third and last of the plague pandemics started in India in 1896. The epidemic lasted almost half a century, causing the deaths of over 10 million Indians until 1918. This number reached 13 million in 1948. The cholera epidemic that occurred in Bengal in 1893 just prior to the epidemic was also a significant serious epidemic (Ferro, 2002: 230). The epidemic that started in India transmitted to America in a short time and the death toll caused it to be considered as a pandemic. A Chinese ship probably brought infected rats and fleas to San Francisco, a port city. In 1900 and 1904, 121 plague cases were detected in San Francisco and 113 people, most of whom were residents of Chinatown, died. Two years after the last bubonic plague happened in San Francisco, there was a major earthquake on April 18, 1906, leaving hundreds of thousands of people homeless. Meanwhile, the population of rats and fleas increased, and the plague flared up in the city. Finally, 166 people were infected, 77 of them died. More than a million rats were caught and killed during this epidemic. Doing such a large rat clearance undoubtedly reduced the effect of the outbreak and the number of dead remained low. After this epidemic, pneumonic plague occurred in California in late 1924 and early 1925, and 30 people died, most of whom were Mexican migrant workers. An average of 1,500 plague cases per year have been reported worldwide since the 1960s.

The disease is most common in countries where drugs are difficult to obtain and hygienic conditions are non-standard (Slavicek, 2008: 108).

Cholera

It is a global epidemic disease that has been encountered in many countries of the world since the beginning of the 19th century and has replaced the plague in a sense. It causes severe acute watery diarrhea and is extremely lethal. If a person took cholera contaminated food or water, it would show its symptoms in 12 hours or 5 days, and if not treated, it could cause death within hours. Most people who get infected with cholera do not develop symptoms. After 1-10 days, these people start having bacteria in their stools, thus the bacteria returning to the environment and potentially infect other people. The World Health Organization (WHO) shows the Indian Ganges River delta as the original source of infection and acknowledges that 7 pandemic cholera epidemics spread to all continents until 1961 (WHO, 2020b). These are the pandemics that respectively occurred in 1817-1824, 1829-1851, 1852-1859, 1863-1875, 1881-1896, 1899-1923 and 1961-1991.

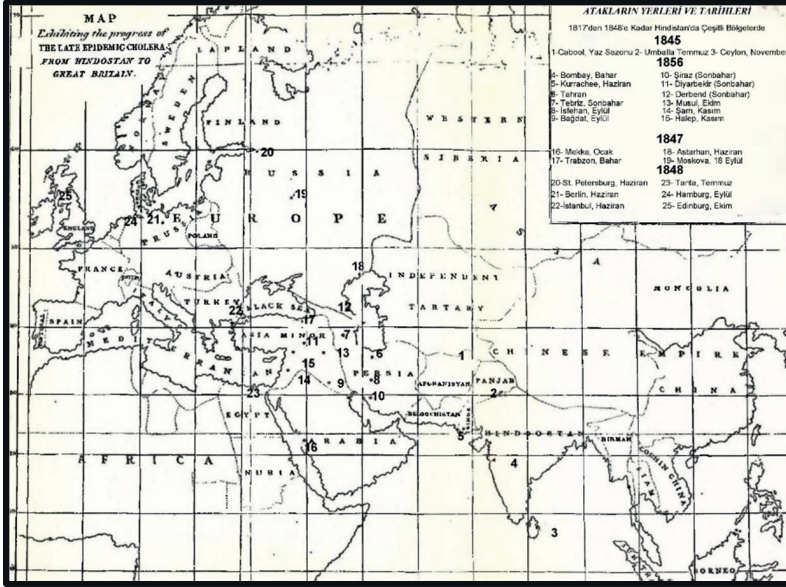
Even if the cholera is not fully defined, it is likely to have a history dating back to the ancient period. It was mentioned above that the probability of an epidemic disease, which Hittites call Henkan, can be cholera. In addition, it is known that cholera-like diseases were identified in India in the 5th century BC and by Hippocrates in Greece in the 4th century BC. It is mentioned in Indian medical texts that a disease called *nja* containing the symptoms of cholera was observed in the 9th century (Pollitzer, 1954: 421-422). It is difficult to say something clear, since this and all such information is not sufficiently descriptive, and it could be associated with other diseases.

In the early 16th century, cholera disease was more clearly defined. Portuguese historian Gaspar Correa noted in his work *Lendas da India* that a person died within eight hours of an illness that began suddenly in the abdomen, as was observed since 1503. This disease was identified by the locals as *moryxy* and reached a very high mortality rate in the spring of 1543. This epidemic in Goa was the first described cholera epidemic (Macpherson, 1872: 201; Pollitzer, 1954: 423). Some outbreaks showing signs of cholera were reported to take place in France and England. It is stated that the popular name of this disease in France at that time was *TrousseGalant* and was used as a synonym for cholera until 1643 (Macpherson, 1872: 44). From 1503 to the first pandemic in 1817, cholera incessantly maintained its effect in India. In this process, 10 out of 64 epidemic diseases were reported to have epidemic character by the Portuguese, Dutch, French and British independent observers and authorities (Macpherson, 1872: 201; Pollitzer, 1954: 423).

Cholera, which was something familiar to India, became a global threat by increasing its contagious and spreading power since the beginning of the 19th century. In 1811, it spread from Calcutta and Jessore to China and Indian archipelago and made it to the west and gained a pandemic feature since 1821.

Cholera continued its spread on the route of land and sea trade routes established by Europeans. The epidemic, which was effective in Sri Lanka, Myanmar, Thailand, Indonesia, and the Philippines, caused the death of 100 thousand people in 1820, 17 thousand of them in Batavia, on the island of Java in Indonesia. It was seen in China in 1820 and most importantly, it was transported to Muscat in Arabia by British troops traveling to Oman by British troops in July 1821 and the epidemic met a new geography. When he reached Basra in 1821, Cholera caused 15-18 thousand deaths in three weeks. It spread to the lands known as Turkey, Syria, and Iran today. In 1823, the outbreak occurred in Tbilisi and Astarhan on the Caspian Sea coast. Baghdad, Shiraz, Tehran, Aleppo, and Iskenderun were important cities that faced the epidemic. There is also scarce information that it reached the African coast between the years 1820-1821 and was seen in the narrow coastal areas of Zanzibar (Dunham, 1866: 427-431; Pollitzer, 1954).

The second cholera pandemic is thought to have occurred in India, and possibly in Bengal, which showed signs of activity there in 1826. The epidemic reached Moscow in 1830. It expanded north through Russia, Poland and Austria, and spread to St. Petersburg and Kronstadt in July 1821 and to Vienna, Berlin and Hamburg in October 1823. From Hamburg, it leaped to England's coastal city, Sunderland. The disease was transmitted to London in the spring of 1832, and then to France on March 23, causing the death of 23 thousand people in a month in Paris. In 1832, the total number of cases in England was 14,796 and the total number of deaths was given as 5,432. The epidemic, moving on a migrant ship from London, arrived in Québec city in North America on June 8, 1832 and started to appear in New York a few weeks later. At the end of 1832, the presence of cholera was detected in Ireland. Although it did not cause much damage in Belgium, Holland and Norway during its expansion in Europe in 1832, cholera cases were encountered. The epidemic occurred in Mexico and Cuba in 1833, but there was no consensus on its spread to Chile and Peru. Since the second pandemic lasted for more than twenty years, it continued its movement and caused the death of a large number of people, even though there were one or several years of interruptions in many countries in Asia, Europe, America and East and North Africa (Dunham, 1866; 5-6; Pollitzer, 1954; 431-440). The second cholera pandemic, which took place in 1829-1851, spread over a wide area and affected the four continents significantly.

Figure 2. Spread of Cholera Epidemic in 1845-1848²

Kaynak: (General Board of Health, 1850)

Mortality rates in the second pandemic show similarities in Europe and America. Deaths in private health institutions in Great Britain accounted for approximately 39.5% of cases. This rate was about 57.25% in hospitals. In 1831-1833, 52,547 of 131,080 cases of cholera in Great Britain resulted in death. These rates remained roughly the same until the end of the pandemic. According to official figures in New York, 2,631 cases of cholera were encountered in 52 days in 1849 and 34% of them, namely 915, resulted in death (Dunham, 1866: 7).

From 1825 to 1844, 1/7 of all European soldiers' deaths in India originated from cholera. This rate was 1/5 for domestic soldiers. In July 1846, the cholera epidemic killed 300 people a day in Tehran for several days. At the end of the epidemic, 1/5 of the city with a population of 60 thousand, that is, 12 thousand people died. Of the 30 thousand populations whose conditions became more lethal in Tabriz, 6,677 died within twenty days. It is noted that cholera deaths in Baghdad exceeded 30 thousand in 1846. The epidemic killed about 9,000 people in Greater Canary Island in 1851, most of them in a few days (Dunham, 1866: 6-7; General Board of Health, 1850: 3-7). The cholera epidemic killed 20,000 people in Mecca in 1831, 15,000 in 1846, and 2-3,000 of the pilgrim candidates in Arafat in 1847 overnight. 6 thousand people died in Istanbul in 1831 and 5,275 people in 1847-1848 from cholera. During the epidemic of 1831, the first quarantine practices started in the Ottoman State (Sarıyıldız, 2001: 310-311).

² The map has been revised for the study.

The third cholera pandemic occurred between the years 1852-1859 and was the deadliest of the pandemics. The outbreak was originated from West India and it was effective mainly in Asia, Northern Europe, North and South America and Africa. With the outbreak of the Crimean War in 1856, it also infected in Istanbul and the Balkans, through allied soldiers, especially the French. In the 1856 epidemic, 3,500 people died in Istanbul. The relatively milder aspect of this outbreak was that its source was identified. It was understood that contaminated water played a serious role in the spread of the disease and drinking safe and clean water was of great importance in preventing the disease (Pollitzer, 1954: 440-441).

The fourth cholera pandemic occurred in 1863-1875. This time Cholera penetrated Egypt, Istanbul, Southern France, and Europe through Arabia, not via the roads to the port cities on the coast of Iran and the Caspian Sea. Like other outbreaks, the area of influence was the continents of Asia, Europe, Africa, and America. Despite being less severe compared to other outbreaks, mortality rates were still very high in some places. For instance, about 115 thousand people in Prussia in 1866, about 80 thousand in Moravia and Bohemia, 30 thousand in Hungary, 20 thousand in the Netherlands and around 30 thousand in Belgium. In 1867, 130 thousand people died from the cholera epidemic in Italy, including Sardinia. The disease, which spread from Russia in various directions in 1871, was also carried to Black Sea ports in Romania and Bulgaria and to Istanbul and Trabzon. The disease spread to Thessaloniki in 1873. 190 thousand people died in Hungary between the years 1872-1873 (Pollitzer, 1954: 442-448). The outbreak in Istanbul caused the death of 15 thousand people in 1871 and 7 thousand people in the 1876 invasion (Sarıyıldız, 2001: 317).

The fifth cholera pandemic (1881-1896) caused the most rigorous death tolls in the years 1881-1883 and 1890. In 1892, all of Europe surrendered to cholera, except for the Ottoman Empire and some of the Balkans. During this epidemic, England had to re-introduce quarantine practices. Despite the measures taken in 1893, the disease reached Istanbul and 1,537 people died. In the pilgrimage season of the 1893 epidemic, which was the “Hajj-ı Ekber” that year, 30 thousand people died, thus demonstrating its most severe impact in the Ottoman geography (Sarıyıldız, 2001: 318-319). The epidemic occurred in Asia, North Africa, Europe and America, but Britain and America had less damage with clean water resources and quarantine implementation. In its initial periods, the epidemic was limited to France, Italy, and Spain in Europe. In 1885, five thousand out of 10,000 cases resulted in death in France (Pollitzer, 1954: 449).

German microbiologist Robert Koch (1843-1910), who is the founder of modern microbiology in the fifth pandemic, showed that the presence of bacteria in the intestine caused cholera and found its agent (*Vibrio cholerae*) in 1883. In this way, the things to be done to prevent the spread of the disease or to keep it in place was understood and the rate of cholera epidemic was kept under control since the beginning of the 20th century (Yıldırım, 2020: 62).

The sixth cholera pandemic in 1899-1923 did not affect Europe and North America much due to the developments in creating public health and hygienic environments. However, it took the toll on India and Russia, the Middle East and North Africa. By 1923, the cases decreased and retreated to India, which was the first outbreak point. More than half a million people died from cholera in India in 1918-1919. 109,560 people died in 1910 in European Russia, this figure dropped only to three in 1912. Although cholera cases were observed in almost every country in the Balkan peninsula between 1910 and 1922, it did not cause high-scale deaths. On the other hand, 682,649 people died from cholera in 1906, 579,814 in 1908, 556,533 in 1918 and 565,156 in 1919 (Politzer, 1954: 452-457).

The seventh pandemic cholera, which started in 1961, appeared in Indonesia, unlike the others. It reached Africa in 1971 and spread to Asia and the Middle East. More than 90% of cholera cases reported to the World Health Organization in 1990 were from the African continent. In 1991, the epidemic that came to South America almost a hundred years later, killed 3,000 people in Peru. Then, it spread to Central America and Mexico.

According to the World Health Organization, cholera continues to be a global threat to public health. It is suggested that it emerged because of largely impoverished, underdevelopment and lack of social development. It is estimated that there are 1.3-4 million cases of cholera and 21-143 thousand deaths worldwide every year due to cholera infection (WHO, 2020a).

Influenza

In its most common general definition, influenza is an acute and febrile respiratory disease. It is caused by influenza A, B and C viruses. The most common symptoms are headache, muscle and sore throat, high fever, dry cough, and weakness. The disease can be passed mildly and without symptoms, and it can also develop serious and sometimes complications leading to death. The most serious complication is pneumonia / pneumonia, which occurs when the flu infection reaches the lung (Temel, 2015: 15).

The flu was an infectious disease that probably threatened human health from ancient times. Hippocrates (460-380 / 375 BC) mentioned a flu-like illness. Studies on this issue show that about ten flu pandemics have occurred in the past 400 years and most of them have been seen in China. The name of the disease emerged in the late Middle Ages when the word "influence" in Italy (Italian: Influenza, Latin: Influentia) was used to emphasize that the unusual arrangement of the planets in the sky would cause diseases. In Turkish, the word grippe taken from French is used in the form of flu (Temel, 2015: 16).

Influenza was not seen as anything but a pleasant annoyance, as it was not a disease that caused people's death or disfigurement and decay in their bodies in a short time, such as the plague, smallpox, malaria or cholera. The flu virus, which has been traveling around the world for thousands of years, and the

emergence of which was not discovered until 1933 started with the domestication of horses, pigs, or ducks by farmers. These stables and poultry have been proved to be flu carriers. The virus that causes the flu disease is constantly mutated and the antibodies of the immune system become no longer recognizable and a new flu appears, which also changes along with the mutation of the virus. This is the main reason why vaccine manufacturers are always one step behind in flu viruses. The flu did not affect very large geographical areas until the 18th century, so it did not have a pandemic character (Nikiforuk, 2001: 187-191).

The first epidemic identified in the history of epidemics with the name of influenza was the epidemic that affected Italy and France in 1173. The flu epidemic in 1580 can be considered as the first flu pandemic. The epidemic originated in Asia and reached Africa, Europe and America. It was noted that 8 thousand people died in Rome alone. An epidemic that started in Russia in 1729 affected all of Europe. The epidemic continued at short intervals until 1733. The flu epidemic, which started in China in 1781, gained an intercontinental scale in a short time and took its toll on Europe and America within eight months. The world made favorable developments in the late 18th century to better fight against flu outbreaks and prevent its spread. The point reached in the field of transportation enabled the disease to spread from one continent to another in a very short time, and the lack of hygiene in the cities was another triggering element. Indeed, there were three flu pandemics in 1830-1831, 1883 and 1889-1890. The most important of these, the 1889-1890 pandemic, was called *Russian Flu* because it spread to Europe through Russia. There are different opinions that the first source of the disease may have originated from China, Canada, Greenland, or Siberia. However, the first cases were observed in St. Petersburg and spread to Europe (Yolun, 2012: 41-43).

One of the biggest disasters in human history was experienced in 1918. The flu pandemic that started that year probably occurred in Asia and reached a pig farm in Iowa in the USA. The epidemic that spread from here was the *H1N1* virus called *Influenza A* and was known as Swine Flu because it spread from pigs. According to the findings of Iowian scientist Richard Shope, the flu of 1918 was almost a blend of virus and bacteria. The epidemic did not distinguish between young and old, and many healthy young people died of pneumonia. American soldiers carried the disease to Europe before the unusual escalation in the death tolls was noticed. The Germans called the epidemic *Bliz Katarrh*, British soldiers *Flanders Flu*, American soldiers called *Spanish Flu* or *Spanish Woman*, however out of all these terms Spanish Flu was the most commonly used term (Nikiforuk, 2001: 194-196). The epidemic, which occurred in three cycles, caused the death of many people, and brought about various economic and social problems. One-fifth of the soldiers in America were suffering from flu. Five thousand people died in a day in Philadelphia, and the gravediggers could not bury the bodies in one month. India, on the other hand, lost a quarter of its population in the epidemic (Nikiforuk, 2001: 194-196). It is determined that the US population, which was 105, 253, 300 in

July of 1918, decreased by 4 million in October-November whether because of influenza or not (Sydenstricker, 1920: 6).

Spanish flu also affected the Ottoman geography, but it was not as devastating as other epidemics or other places in the world. It is estimated that around 15-20 thousand people died in Istanbul in 1918 due to the flu. According to evaluations made by different people and institutions, 40-50 million people died in the world due to the Spanish flu. The country most affected is India with a loss of 18,500,000 people. It was followed by China (4-9.5 million), Indonesia (1.5 million), USA (675 thousand), Nigeria (455 thousand), Russia (450 thousand), Italy (390 thousand) and Japan (388 thousand) (Yolun, 2012: 114, 121-130).

After the Spanish flu, there were three more flu epidemics that erupted in China. The 1957 outbreak was named as *Asian Flu* and *H2N2* type virus caused the disease. The outbreak in 1968-1970 originated from the *H3N2* virus and has been described as the *Hong Kong Flu*. Approximately 1 million people died in each of these pandemics in the world. Following these, another epidemic occurred in 1977, but this epidemic remained at an epidemic level. 200,000 people died in the Swine Flu pandemic in 2009-2010. The *SARS* pandemic that emerged in 2003, the *MERS* which occurred in 2015 and which is still continuing and the *COVID-19* pandemics that emerged in the last months of 2019 and affected the whole world, are influenza from the *coronavirus*.

Effects of Global Epidemic Diseases on Society Life

Epidemics have affected human and society life in many ways. This effect varied according to the conditions, understanding and knowledge of the time of the epidemic. However, no matter which era the epidemic occurred, it can be said that the fact that people were exposed to many casualties due to an illness they faced at an unexpected time showed similar social, economic and political effects.

Psychological and Social Effects

The most prominent effect of epidemics in history in the short term is the shock and panic created by the psychology of a death wind, where people do not know their nature, origin, cause, and treatment. If people lived where the deadly epidemic originates, either they tried to escape immediately, or they gave up everything and surrendered to death by neglecting their families. During the 1348 plague epidemic, it is noted that Florentine people felt like that they might die any day (Slavicek, 2008: 78-79). A father who was depressed in Chicago in Spanish flu in 1918 found the cure of the disease in cutting his children's throats (Nikiforuk, 2001: 195). Since people believed that a poisonous gas had come out of the infected bodies in plague outbreaks in the Middle and New Age, they had their beggars or ex-criminals doing their work professionally, without even thinking about the burial work of their relatives (Slavicek, 2008: 79). It is possible to see this uneasy/hysterical mood created by diseases in almost every epidemic.

Those with the epidemic were mostly treated at home. Other residents in the house, living side by side with pain, were experiencing a psychological breakdown.

Fear, anxiety, panic, hopelessness, and the belief in catching an epidemic spoiled the mental balance and could lead many people to suicide. In the plague epidemic of Milan in 1630, there were people living alive in the grave before they died or after they died, or people who dug their graves and died there after they buried their dead (Minios, 2008: 177). Daniel Defoe analyzed suicidal responses over the 1665 London outbreak. According to his findings; if frustration and fatalism in the end of a few days prevented people from being cautious, this was an indirect suicide. Some of them were especially throwing themselves into the water and were strangled. Those who caught plague were killing themselves with unbearable suffering by burning their bed, jumping out the window, or with a gun. Others were killing themselves in fields or forests at the bottom of a bush (Defoe, 1896: 174-175).

The disturbed mood caused by the unknown origin and nature of the epidemic disease sometimes forced administrators to do irrational practices. During the London epidemic of 1665, people still did not know that the plague was spread by fleas carried by rats. They guessed it was caused by animals, but they chose the wrong animal as the victim, which were cats. Based on this idea, the mayor of London ordered the killing of all cats and dogs, which brought more rats, more fleas and inevitably more plague (Bauer, 2015: 118).

During and after the Black Death epidemics (1348-1430), infant mortality rate is quite high. The act of killing babies by drowning was no longer exceptional and became common. People were able to kill or abandon their babies due to their corrupt psychology during outbreaks. The poverty and harsh life conditions encountered in the years of plague epidemics in Italy made people so cruel that they could afford to be a child murderer by killing their children who were not fully formed then. As the number of children losing their parents in the epidemic increased with the abandonment of children and babies, orphanages were established as a social imperative. Orphanages established in 1445 in Florence can be given as an example. The establishment of orphanages relieved mothers and fathers in a sense, causing more babies or children to be abandoned (Roncière, 2006: 234-235, 291). During the Spanish flu in Philadelphia in 1918, children whose parents died, were strayed in the streets as flu orphans (Nikiforuk, 2001: 195).

Another socio-economic impact of outbreaks in European societies can be expressed as family crises. Some families whose financial status deteriorated after the epidemic tried to establish a relationship with another family with good conditions and improve their financial status. Some desperate nobles in Central Italy committed banditry and hired their military forces to neighboring city-states as mercenaries. Despite all this, some noble families disappeared without leaving any heir in life. This damaged the noble centered social and

economic system. The dynasties, the enviable properties, which took centuries to build, have been erased from the history of many noble families that have been swallowed by another family at once (Slavicek, 2008: 85-87).

While epidemic diseases continued, there was an excessive demand on social service groups. Clergymen, lawyers, and notaries were required for the last rites of agonizing and dying people, and doctors and pharmacists for treatment. In pandemic diseases, tens or even hundreds of people died every day in some places. Therefore, gravediggers can also be considered as the most needed social workers of the era (Slavicek, 2008: 79).

One of the most important social consequences of epidemic diseases is the disruption of the social order in many respects. In epidemics or pandemics, people often ignore the rules of society and law, and often take out banditry, plunder, rape, etc. Their involvement in inappropriate behavior has occurred in every society during and after the outbreak.

The causes of epidemic diseases are certain, and when the importance of sanitation is revealed, there have been changes in the understanding of cleanliness and hygiene of societies. In addition to personal cleaning, it was necessary to follow the hygiene rules in social life. It became clear that especially Christian societies should make a radical change in bathroom and toilet cultures because hygiene was not a requirement of their religion. The person who was washed at baptism no longer needed cleaning. However, this spiritual cleansing, unfortunately, did not provide protection against carriers and germs of epidemics (Tannahill, 2003: 130). Although the Romans preserved the culture of the bath, the habit of the bath was abandoned after the fall of the Roman Empire in 476. Bath and bath culture in Europe were revived for a short time due to the epidemic since the second half of the 14th century. Unfortunately, until the end of the 17th century, people kept away from water and soap. Since the bathrooms were used in free intercourses, venereal diseases from the Far East and America spread, but it was finally concluded that the disease spread through the water. Europeans, afraid of syphilis, abandoned the bath and bath traditions and threw themselves in the lap of diseases. People sprayed perfume instead of taking a bath and started to wear underwear so that their expensive clothes do not get dirty. Baths, on the other hand, became places where syphilis patients were treated and mercury cures were performed (Nikiforuk, 2001: 131).

The habit of not taking a bath in Europe was, in a sense, a crime of the Catholic Church. The church did not worry about the disastrous unhygienic environment or the natural smell of man. It was the Triente Consul, which, for moral reasons, imposed a general ban on bathing, thereby leading to a new fragrance barbarity. People were desperately wrapped in heavy scents to hide the bad odors created by the non-cleanliness, and the laundry was washed and perfumed more often to remove the stench (Hurton, 1995: 35-36). In the 17th century France, an oriental fragrance named *Pomander* was very fashionable.

There were six kinds of smells in an orange-like bowl, usually made of gold or other precious metals. Noble women carried this in a decorative style with a chain on their belts and believed that these fragrances would protect themselves from epidemics. The death of many wearers from the plague did not prevent this habit from disappearing and it continued to be used as a somewhat magical measure (Morris, 1999: 105). In Europe, personal cleaning and bathroom culture started to settle in the middle of the 18th century, and in the 1740's, aristocratic families started to have baths in their summer and winter houses. Bathroom had returned as a luxury entertainment and therapy tool rather than a concern for hygiene (Grieco, 2005: 60).

Especially when it was revealed that the cholera epidemic spread from contaminated water sources and food, more attention was given to environmental and hygienic conditions. After the big fire in 1666 in London, the houses made of wood and reeds that were suitable for the living of mice and vermin were abandoned, and the houses made of tiles and bricks started to be built, thereby significantly reducing plague outbreaks (Payne, 1889: 14).

It is possible to say that Muslims and Jews paid more attention to sanitation and personal hygiene than Christians during historical epidemics and that epidemic diseases spread less in these societies.

In the Ottoman society, precautions were taken to produce basic food products in hygienic conditions rather than personal cleaning and delivery to the consumer without deterioration. In the third cholera pandemic, which started in 1885, an order was given to the butcher shops in Istanbul with the thought that the disease might be related to spoiled food consumption in non-hygienic environments. Because until that time, every butcher's shop also served as a slaughterhouse, and animals were slaughtered and sold in the same place (Sarıyıldız, 2001: 313).

Political Effects and Results

Major epidemics have affected the armies throughout the history, fighting against the disease on the battlefield. The Peloponnes wars took place under the shadow of the plague, the expeditions of Alexander - malaria, the wars of the Crusades – malaria and typhus, the Century Wars of the Medieval Age (1337-1453) - plague, the Crimean War – cholera and the last years of the First World War - Spanish flu. We can say that epidemic diseases directly or indirectly affected the course and outcome of these wars. Apart from these, dozens of examples of the effects of epidemic diseases can be given to the consequences of many wars, invasions, conquests, or sieges in history. Perhaps two of the most important for human history are the defeats of Aztecs in 1520 and the Incan Empires in 1531 against the Spaniards with relatively smaller number of soldiers due to the smallpox epidemic they suffered and their vanishing from history.

During the Crusades, the Crusader armies fought against hunger, plague and malaria, and the army of 500 thousand fell to 100 thousand (Runciman, 1989:

170-197). Most of the diseases, whose symptoms were not clearly known, could be malaria, which was also common in the Arab geography. Indeed, Nikiforuk says “The Arabs beat the Crusader armies with malaria” (Nikiforuk, 2001: 30).

There are many social and economic reasons that brought the end of the Ming Dynasty, which took over in China in the 14th century, in 1664. A Chinese postman named LiTzu-ch’eng and people who were dissatisfied with what he had gathered had not encountered any resistance when they arrived in Beijing because the soldiers had left the city hit by the plague. Thus, the three-century-old Ming Dynasty came to an end and the Manchians who were not actually Khan Chinese dominated China. This historical event, which is important for Chinese political history, of course had many distant and close causes. However, the last reason was plague (Bauer, 2015: 95-97).

The enormous political powers of the great feudal lords in France and England decreased well before the 1348 great plague. In the second half of the 14th century, powerful monarchic administrations were active, and feudal gentlemen were no longer as strong as before. Despite the political influence of the central royal governments, it was still the responsibility of feudal lords to provide local security when Black Death reached France and Britain. Throughout the 1400s, landlord nobles supervised the power of courts and law enforcement units. In contrast, some aristocratic families, who were heavily affected by the Black Death pandemic, neglected their police and judicial duties. This led to the deterioration of law and order in the European countryside. People increasingly used violence to get rid of their class differences, and rural crime rates increased rapidly. The restless and increasingly violent atmosphere of the post-plague years contributed directly to two popular uprisings, first in France and then in the UK. The Century War between Britain and France continued for more than twenty years when the *Jacquire Uprising* (Peasant Uprising) broke out in France in the spring of 1358. This revolt did nothing but the rise of the lawlessness that the kingdom was dragged into after the epidemic in France. When the pandemic took a short break in 1350, the Spanish army and other mercenaries employed by the British army wandered in the countryside of Northern France and carried out looting and rape. The villagers in northern France rose up against the aristocracy in France, and the gangs formed by the villagers robbed and looted the nobility for about a month, as the manor owners could not protect themselves and refuse to compensate them. Government troops were only able to end this uprising by slaughtering groups that terrorized. The name *La Jacquerie*, given to this bloody rebellion, comes from *Jacques*, which is used as a general name for all villagers in France (Slavicek, 2008: 87-88).

One of the events that showed the role played by plague in the political history of the states occurred in England. Twenty years after the *Jacquerie Uprising* in France, this time England was shaken by a peasant revolt. The leading cause of the 1381 Peasant Revolt was a tax that the royal government imposed on all British citizens over the age of 15 to finance the ongoing Century War.

Most of the villagers were strongly against this tax. Because everybody, rich or poor, would pay the same tax and so it was unfair. The peasants were worried that the noble cash-strapped nobility would reverse the economic and social gains they had made after the pandemic. In late spring of 1381, angry peasant communities in East England attacked local tax collectors and nobility, and the uprising soon spread to a large part of the southeastern part of the kingdom. The rebels led by Wat Tyler, a blacksmith, set off for London in June to make their complaints directly against the King of England II Richard. However, Tyler, whose army cannot be compared to the regular royal army, was killed. The killing of Tyler fueled the rebellion even more, thousands of villagers were executed to suppress the rebellion. The government also abolished the taxes that the people and especially the peasants did not like, in order not to decrease the population, which has decreased considerably due to the plague (Slavicek, 2008: 88-90).

Effects on Economy

In societies with a certain financial system tax order, every person who dies refers to a decrease in tax income, production, labor and consumption. The most important consequence that epidemic left behind was human deaths and directly affected the economy.

Justinian Plague, which started in 542, had a serious destructive effect on the population of Istanbul. The people of Istanbul could not even leave their houses and the streets remained empty due to the plague. This situation, of course, caused trade and production to stop. Merchants and artisans who completely closed their businesses left their jobs. Most of the workers in the agricultural sector died and then there was a serious shortage (Akdere, 2018: 320-322). In this epidemic period, although the harvest time was over in Italy, the product was waiting for the workers to collect the harvest and the grapes were standing in the vineyard. Therefore, the survivors needed to be reorganized to rehabilitate the natural fields and swamps that replaced the cultivated areas (Montanari, 1995: 18-19).

During the 1348 plague epidemic, similar scenes were experienced, the trade places were closed, the fields were empty, and the animals were left unattended. Cessation of production meant higher prices. In all epidemic times and afterwards, especially the prices of basic food products increased excessively. Lack of labor also increased wages.

Although many jobs were interrupted and the costs of certain services and goods were high, the economic effects of Black Death were not completely negative. After surviving the first shock of the outbreak, the standard of living improved for most of the survivors. There was a lot of population in Europe and the available nutritional resources were not enough. For this reason, there were frequent famines before Black Death. After the epidemic, resources were now sufficient for the current population (Slavicek, 2008: 81).

After the 1346-1352 pandemic, the nobles in England wanted the fields to be cultivated but they could not find people to work in their fields. For this reason, many crops could not be harvested and rotted in the fields. The survivors and farmers found themselves in a high wage environment and were no longer able to work at all costs. They demanded high wages, the nobles who had to pay them started to get poorer and their property was getting smaller. On the other hand, the financial situation of the workers improved, and they started to take their own lands. The feudal system that the peasants worked for the nobility in exchange of land started to collapse slowly, and the Parliament's limitation of wages did not work well. A few large landowners were able to partially improve their situation by switching to animal husbandry where fewer workers were needed. Upon this development, there was an increase in the wool production of the island and the production, which was one thousand balls in 1350, increased to 11 thousand tons in 1362 (Slavicek, 2008: 81-84).

If people who died during epidemics were taxpayers, this meant a tax loss. The fact that people left their places and went to other places for the purpose of not getting infected caused them to remain unregistered for at least a while. Thus, they did not pay their taxes or perform their activities related to their fields of activity. During the plague epidemic that continued in Cyprus in 1573, poll tax, which was one of the taxes collected personally, was not fully collected due to deaths from the plague. Since the janissary salaries were covered by the authority, their salaries could not be paid from this resource and brought an additional burden on the state budget (BOA, MD 23, 1573: 176/372). The state often imposed tax exemptions for a certain period so that services in places facing epidemic diseases were not disrupted or evacuated. Tax exemptions also meant an unexpected and unplanned decrease in revenues and an economic crisis.

In Ottoman society, during the epidemic, more problems were encountered in collecting the taxes of non-Muslim subjects because non-Muslim people were more in a hurry and insistence on leaving their places when compared to the Muslim population. This has often resulted in the lack of adequate or no collection of poll tax income. From this point of view, it can be said that the item which was mostly affected by epidemic diseases among Ottoman tax types poll tax income. Not only the personal taxes of the deceased, but also the taxes on the products they produced, bought, and sold decreased and reduced as such. In this context, it can be said that there were serious decreases in the taxes collected from cereals, agricultural activity taxes and commercial activity taxes (Kılıç, 2019: 382).

One of the most important effects of epidemic diseases on economic life is that domestic and foreign trade has come to a halt from time to time. In the plague epidemic periods, no goods that could come from a diseased place were brought inside the borders. For example, quarantine was applied to the ships berthing in the port since 1485 in Venice. The first quarantine implementation in the Ottoman State started during the 1831 cholera epidemic. Although

its necessity and benefit is not discussed, it should be noted that quarantine practices are another factor preventing the viability and continuity of trade.

Effects on Settlement, Immigration and Population

It is common for people to change their places as a precaution because of epidemics. During these displacements, the old places were either completely emptied or there was little population left. Migrants either set up a new resettlement site or settled in another rural or urban resettlement site where the disease is less common.

The fact that the infected people left their places of residence by migrating was a danger and could cause the disease to spread rapidly. The movable and immovable properties left in the abandoned places were open to robbery and pillage. In this regard, the security of life and property of the few people who remained in the evacuated regions was also endangered. Epidemic migration caused bidirectional negativity. The first was the disruption of the service they were obliged to perform in the regions they left, and the other was the reduction of the taxes they gave. Every mass migration incident meant that one place was devastated, and another was the settled. A place could decrease in terms of population and disappear completely after a while, or a very small settlement could become a large settlement center. Since the migrations experienced in disaster times were unplanned and/or planned in a short time, the places receiving immigration were caught off guard. Therefore, economic and social problems were inevitable (Kılıç, 2017: 382).

Many of the villages destroyed by plague during Black Death in Europe (1346-1352) could not be re-sized. The survivors migrated to many cities. Rural areas have reduced population, and cities have become crowded. Artisans also moved to cities where they could sell car wheels, barrels, iron tools, clothes, and other goods they produced to more people. Clergymen, whose churches in the countryside were empty, also made their way to the cities. This transportation, which developed from the countryside to the cities, was called urbanization. Since hundreds of houses were left empty in rural areas, the villagers who remained in their settlements settled here and started to cultivate abandoned lands. Since there was no one to dislodge them anymore, they became the new owners of the land (Bauer, 2014a: 208).

At the end of the plague pandemic that started in the middle of the 14th century, there was a significant decrease in the world population. In 1000, the world population was 265 million. This population increased by more than a third in 1200 and reached 360 million. In the 200 years that followed, there was no increase, but a decrease. Of course, wars had a role in this as well as plague. The fact that the Mongol invasion continued in China for almost a century had reduced the huge population of 115 million to 85 million in the 1300s. As there was no recovery in the 14th century, the population decreased even more due to the plague. The Asian population was also less in the 1400s than in the 1100s. Due to starvation and plague epidemics, the world population,

estimated at 400 million in 1300, remained in 350 million people even when the situation partially improved in 1400. This situation shows us the negative impact of Black Death on the world population. The great famine in 1316-1317 before the Black Death decreased the population of Europe, but the pressure of the overpopulation on the food resources was alleviated with the plague epidemics that started in 1346. As the population declined, there was an abundance circuit at the end of the century and people were fed better than before. The European population was 35 million at the beginning of the 11th century and 80 million at around 1300. By the 1400s, the European population was only 60 million (Pointing, 2011: 417, 420-421; Pointing, 2012: 109, 116-117, 122).

The conquest of the New World (America) by the Europeans and the decline of the indigenous population there is another important historical event to be considered on the epidemic scale. The natives died in their beds with the Eurasian-borne microbes brought by them rather than in the arms of the Europeans. Many of the locals and tribal chiefs died, and the morale of the survivors collapsed, and their resistance was broken. While the Spaniards took over the Aztec Empire in Mexico in 1520, they benefited from the smallpox that killed almost half of the Aztecs from Spanish Cuba. This disease, which only killed the natives and probably did not kill the Spanish thanks to the immunity they gained, broke the morale of the Aztecs, and even questioned the religion and belief systems. By 1618, the Mexican population, which had previously been 20 million, fell to 1.6 million (Diamond, 2013: 270-271).

The end of the Inca Empire was due to epidemics as was the case with Aztecs. There were only 168 people in the suite of the Spanish Pizarro, who set foot on the Peruvian shores in 1531 to take over the Inca Empire. He could not find a serious force in front of him and easily captured Machu Picchu, known as the lost city of the Incas. There are various opinions about the sudden abandonment or evacuation of Machu Picchu. The city had not yet been discovered before the Spanish took over. This meant that it had been abandoned or forgotten long ago. Although there are theories that the city was exposed to drought for a long time, a big fire broke out or was evacuated while resisting the Spanish occupation; the main reason was smallpox. The smallpox that came to this land in 1526 killed most of the Inca population. Emperor Huayna Capac and his successor were among those who died. After the throne remained empty for some time, the fight for the throne started between the two sons of Huayna Capac, and the empire was broken and weakened. By making use of this situation, Pizarro destroyed the Incas, who were disintegrated by then and their population decreased significantly (Diamond, 2013: 271; Haught, 1999: 138).

The reason for the decrease in population in the district of Ayasuluk in the area where the famous city of Ephesus was established and the fact that it became a village consisting of several households in the 18-19 centuries is shown as the abandonment of the locals due to malaria and plague epidemics (Emecen, 1991: 227).

In the early months of 1764, almost 3/4 of the tribes belonging to the Bozulus Turkmen Community within the Karaman Province were scattered to Anatolia, Aydın, Karaman, Sivas, Ankara, Hüdavendigâr, Saruhan and Sultanönü because of *plague illness* (BOA, C. Zb, Dosya No: 33, Gömlek No: 1614, 1764: 1-2). The nomads suffering from many epidemic diseases had to experience the economic hardship of possible loss of life and property. It was obvious that an epidemic would infect their animals and destroy all their economies. For this reason, it was a reasonable attitude that the nomadic people moved away from the epidemic places to get rid of an epidemic that could infect themselves or their animals.

Its Effects on Religion and Religious Life

Epidemics became a blessing, especially in Ancient societies. In belief systems other than monotheistic religions, it is known that people invented various gods with the instinct to be protected in every field they suffer. People who were desperate about fighting illnesses accepted that there were gods related to them and believed that they would protect themselves with the offerings and sacrifices they offered to these gods.

The Hittites had a god of plague and epidemics called *Shulinkat*. A plague god is also mentioned in the epic of Gilgamesh (Gilgamesh Epic, 2001: 86-87). Almost all the Egyptian gods are healing. However, some gods were the cause of epidemic diseases. God *Seth* was causing epidemics. The goddess *Sekhmet*, symbolized by the lion's head, caused a plague epidemic in particular (Bayat, 2010: 61).

The tradition or belief in sacrificing human and animal by sacrificing epidemics was also seen in the Incas and Aztecs, ancient civilizations of Central America. In times of epidemic, human beings were sacrificed instead of animals. However, the torture found in Mayans and Aztecs does not seem to have existed in the Incas. When man was sacrificed, it was important to do this perfectly (Ronan, 2003: 62).

There is a cosmic war between the good and the bad in the doomsday according to Christian faith. Four horsemen who participated in the war are; plague, war, famine, and death (Wilkinson, 2010: 99). Bible mentions about the plague in many places on various occasions; it is associated with famine and sword (war) and is depicted as the Four Horsemen of the Apocalypse (Porter, 2016: 17). Since famine, war, and plague are a wrath God sent to people, there is a prayer of Christians which says, "God protect us from famine, war and epidemic" (Davis, 2009: 194).

According to the Christian belief, the reason for the plague was divine. Swedish king Magnus II, like many other aristocrats, adopted the view of the church, saying, "God punishes the world with this sudden death for people's sins." Looking at the stars, the medieval physicians, rather astrologers, decided that God's discretion was a result of the wrong arrangement of Mars and Jupiter,

the vapors that created *bad weather* and epidemics. This bad weather concept was perceived differently among different peoples. Viennese regarded the plague as the *Plague Virgin (Pest Jungfrau)*, a blue flame that appeared on the lips of the dead. The same virgin was perceived in a different format in Lithuania and waved a red flag to infect the inhabitants. In other countries, “God’s Disease” took many forms, such as blind women, disabled people, traveling Jews, and men on black horses. It was regarded as a perverse thought that a medieval commentator’s objection to the thought of divine punishment, saying, “Nothing with such complicated results can be the intention of God” (Nikiforuk, 2001: 75-76).

Medieval Europeans were religious people loyal to the Christian beliefs and the Roman Catholic Church when Black Death reached Italy in 1347. They wanted to establish a more intense and more special relationship with many European Gods after Black Death. This new religious passion marked the rise in the construction of chapels independent of the church for private worship. Private chapels became popular among aristocracy that was on the descent for a long time, and the chapel building business wasn’t limited to aristocrats, but also started to spread rapidly among other high-level professionals, such as traders, doctors and lawyers. Even middle-class masters participated in the private chapel craze. Medieval artisans established guilds and artisanal associations to maintain a certain standard in trade, and these professional organizations built chapels for the exclusive use of members and families in the early 14th and 15th centuries (Slavicek, 2008: 91-92). The desire to establish this chapel was since the advices of priests against the epidemic did not work. It can be said that religion and God were not questioned in the Christian world throughout the period, but a need to go directly to God without the mediation of the clergymen emerged. The attitudes of the Catholic churches in Europe, which are not based on mental illness and other issues, constituted the main basis of the Reform movement in the 16th century.

Jews, like Christians, believed that illness was sent to them by God, and they said that this disaster was sent to them as a result of their rebellion against divine orders when the plague spread (Gökhan, 1998: 75).

The approach to epidemics in the Islamic world has been shaped by the hadiths/sayings-acts and teachings in the sunnah/path of the Prophet. The prophet of Islam applied a great discipline and education to prevent the droplets of mouth or phlegm in the pandemic, as we face today, experienced in his own time, as the most important precautionary measure. Indeed, when he was going to sneeze, he would try to prevent the particles coming out of his mouth from spreading around either by covering his face with his hand or his clothes (Hadislerle İslam, 2014: 442).

According to the belief in Islam, Allah will reward those who caught deadly diseases died and died. In hadiths, it has been reported that women who died during childbirth, those who drowned, those who burned, who died from abdominal

pain and plague will be regarded as martyrs (Hadislerle İslam, 2014: 446). In hadiths, there are three basic principles regarding the plague.

1. Since dying from the Plague is a martyr, it is a mercy from God for the Muslim and a punishment for the non-believers. For example, on Arif Mehmed's tombstone, dated 1812 (H. 1227), an expression stating "mat'ûnenşehîd" is written (Panzac, 1997: 150).
2. A Muslim should not enter or exit any plague outbreak. It should be under the influence of these hadiths (Hadislerle İslam, 2014: 441-442, 446, 524) that the reflex of urgently leaving the sick place is less common in the Islamic world than in western societies. The hadith of the Prophet can be considered as a social isolation with today's expression. This measure acknowledged the existence of the disease and the inability to fight, but it pointed to the mind rather than a fatalistic approach.
3. The plague is not an infection. It was sent directly from God. There are thoughts that the hadith of the Prophet "There is no contagiousness in the disease" contradicts with the hadiths "run away from leprosy like a lion" and "do not let the sick camel near the sturdy camel". According to the interpretation of the hadith analyzers working on the subject, the Prophet wanted to bring the belief that the disease could happen with the permission and will of God, spontaneously, and that at least some of the diseases were not contagious (Kesgin, 2014: 117).

The main reason why these three principles became an important doctrine in Islam can be shown as the bad consequences of the recurrence of the Justinian plague in the first years of Islam (Dols M. , 1977: 444-445).

In Muslim societies, bath and bath culture was a religious obligation. For this reason, the diseases could not find a rapid spreading area caused by lack of personal hygiene. The divine prohibition of out-of-marriage sexual intercourse blocked the spread of venereal diseases such as syphilis. However, it should not be forgotten that it is not enough to follow the personal hygiene rules or to fulfill religious duties to prevent microorganisms causing diseases to be transmitted to humans. The society had to be conscious and ready for it. For this reason, global epidemics could spread easily in the Islamic world, as well. Although Egypt has been an Islamic country for many years, it has been the first starting point of many diseases. This was due to the fact that the people living on that country belonged to a geographical location which was vulnerable and open to exterior influences rather than to which religion they belonged to.

Travelers and ambassadors who visited Ottoman Istanbul noted that plague epidemics did not spoil the calm composure of the Ottoman understanding, but when the number of daily plague victims was revealed, there was a mass prayer in Okmeydanı (Tebly, 1988: 271). Another example of the tradition of praying during plague outbreaks relates to the scholar and poet, Cemâl-i Halvetî, the founder of the Cemâliyye branch of the Halvetiyye sect. II Bayezid

and Koca Mustafa Pasha invited Cemal Halvetî from Amasya to Istanbul, so Cemâl-i Halvetî became the first representative of this sect in Istanbul. While Cemâl-i Halvetî was found in his lodge in Kocamustafapaşa, he was sent to Hajj with his forty dervishes in 1494 to pray for those who suffered from plague, but he died on the road near Tabuk before reaching (Tayşi, 1993: 302).

Religion-Based Non-Religious Practices / Superstitions

Considering epidemics as a wrath of God was often not a cure for people's suffering. While the state of despair sometimes caused the formation of intellectual and non-religious fanatics, sometimes it revealed superstitions that we can describe as religion-referenced but non-religious practices. One of the most striking examples in this regard were the whippers who left a mark on medieval Europe.

A plague epidemic that emerged in 1259 caused Raniero Fasani, who was known as the hermit of Umbrevia, to spread the teachings of sacrifice, bail and martyrdom, to calm the god, protect his nafs/soul. They gathered passionate fans around them and went further and launched a walk in Northern Italy with their fans, whipping themselves as part of their teachings. They were half-naked, whipping their hands with whips, sticks and all kinds of whipping tools, whipping themselves and each other until blood came out of their bodies. This movement was a similar practice of Adamites, which emerged as a perverted movement in the year 200 and disappeared after two years (Scott, 2001: 261-262). After the 1348 plague epidemic, whippers from the radical *Flagellant* sect had reappeared and wandered across Europe (Ribard, 1974: 415).

The Catholic Church and its courts, the Inquisition, linked the Black Death and plague epidemics in 16-17th centuries with the witches, blaming black cats and cat-feeding women. Germany is known as the central country for the witch hunting. It is followed by Poland and to a minor extent by Spain. There was no witchcraft in Portugal and Ireland (Aslan Karaküçük, 2010: 46, 50).

The fact that Jews were held responsible for the appearance of Black Death and the killing of many Jews with various tortures was not necessarily the result of a blind belief that the Jews poisoned wells and spoiled the air. Those who borrowed from usury Jews killed them, thus not only soothing the angered God but also getting rid of their debts. Catholic priests personally participated in the Jewish massacre and completed the religious reference dimension of the work. In 1351, almost no Jews remained in Central Europe, and those who survived fled to Russia and Poland (Haught, 1999: 52-53; Nikiforuk, 2001: 73).

Many non-religious practices such as talisman, magic, fortune telling, and magic were other superstitions that were used to prevent and treat epidemic diseases. The Hittites used fortune telling to detect epidemics. It is possible to see an example of this in the plague prayers of II Murşili. Plague prayers were intended to persuade God to show the cause of the disease in the fortune (Alparslan, 2006: 127).

Evliya Çelebi stated that three out of twenty talismans inherited from the pre-Ottoman period in Istanbul were applied against epidemic diseases (Evliya Çelebi, 2008: 33-34). In Ottoman society, there was a belief that the house where pigeons came to nest themselves would be protected from the plague (Panzac, 1997: 161). Although this belief was non-religious, it should be related to the sacredness imposed on role of the pigeon during the Migration in Islam.

Gypsies living in Eastern Europe carried the figures they embroidered on fabric pieces and carved on wood pieces to protect them from diseases. These figures were thrown into the fire during epidemics of cholera and plague (Berger, 2000: 24).

In the later years of the Justinian plague and during the period of Emperor Mavrikos (582-602), it was observed that 6,000 Turkish prisoners of war, sent by Sassanid ruler Hüsrev to Istanbul, had cross tattoos on their foreheads made with black ink. Mavrikos asked the prisoners why they had a cross tattoo on their foreheads, and they stated that the Christians who lived between them during the plague epidemic in their homeland years ago had cross tattoos on their foreheads and that they had escaped death for this reason, so they also tried this way to protect them from plague (Akdere, 2018: 324-325). This example is striking as it indicates that people do not hesitate to practice even a superstition outside their belief systems in times of desperation.

Effects on Science, Culture, Art, and Civilization

After the epidemic disaster, which was very devastating and destructive in terms of its results, the minds of scientists focused not on the world they live in, but on death and salvation. In this context, it is necessary to evaluate plague reports or treatments written during Black Death. The science of microbiology has developed faster and continues to develop in order to detect microorganisms causing epidemics.

As the demand for luxury or other necessities increased after the outbreaks, trade and travels increased to supply the items needed from all over the world, and new vehicles were used especially in maritime transport. Better maps have been made and bold discoveries have been made after the most devastating Europe outbreak. Undoubtedly, the origins of the intellectual revival in Renaissance were also material elements (Fara, 2012: 121).

Although the discovery of America caused political and economic gains for the Old World, it can be said that it was the beginning of the end for America's indigenous people. It is hard to say that there were no epidemics until America was discovered. However, none of the known lethal global epidemics had spread from there. One of the reasons why the indigenous population in America disappeared up to 90% was epidemics transported from Europe. An advanced civilization, like the Inca civilization, has almost disappeared, local tribes have survived symbolically, and even the languages and cultures of many

have not survived. This situation can be described as a very important loss for the global cultural heritage and accumulation.

Quinine, the most important drug of malaria, came to Peru from Europe via Jesuit priests. Every year in the 19th century, millions of kilos of *cinchona* were sent to Europe, which is the raw material of quinine. While Peruvian rulers and neighboring countries forbade their seeds and seedlings to be taken out of the country, the Dutch government had illegally bought half a kilo of seeds from an Australian smuggler and made the best investment in history. In the 1930s, approximately 11 million shells per year were obtained in Dutch cultivation areas on Java Island; this corresponded to 97% of world quinine production (Conner, 2013: 105).

If isolated in a suitable place, epidemic times could turn into “opportunity times” for scientists. When the university in Cambridge was closed during the plague epidemic of England in 1665, the famous scientist Newton went to his mother’s home in Woolsthorpe, where he had the most productive period of his scientific life (Ronan, 2003: 387-388).

The 1348 plague epidemic also influenced the literature of medieval Europe. During the plague epidemic, Geoffrey Chaucer, who was probably a child and wrote the famous “*Canterbury Tales*”, was entertainingly constructed on the low moral standards of the Catholic clerics whom he mocked as tales of money collectors. The most important work that Black Death brought to world literature was Boccaccio’s *Decameron*, who lost many friends and families during illness. This work was about a chilling account of the plague in Florence. The work consists of a collection of humorous, often obscene tales, of ten young Florentine nobles fleeing the plague. Other writers, contemporary of these two authors, were more melancholic and pessimistic, unlike them. Eustace Deschamps (1340? -1404), the famous French writer of the period, depicted the plague with a gloomy narrative (Slavicek, 2008: 103).

The effect of epidemic diseases on the literary life of society has also manifested itself on laments, jokes, legends, and poems. It is possible to find examples in this regard in the literary texts of all countries. Black Death has influenced all segments of the society and art has got its share. Effective artists and talented masters were killed. It also collapsed the schools that worked on the same style and theme, as well as killing famous sculptors, painters, and stonemason guilds. It was very difficult to raise talented people to take the place of these artists and masters. Indeed, after the outbreaks, those generously decorated cathedrals of medieval architecture were replaced by plain and flat plates (Slavicek, 2008: 98-99).

Famous music master Abdulkadir Merağî, poet Fuzuli, Fost, the founder of the printing house, and French political philosopher Bodin Jean all died from the plague. While composer Hamâmîzâde İsmail Dede Efendi died from cholera, the famous composer and violin virtuoso Paganini, composer Chopin, writers

Jean Jacques Rousseau, Schiller, Goethe, Chekhov and George Orwell are just a few of the famous artists and scientists who lost their lives from tuberculosis (Kılıç, 2004: 129-141).

As the plague continued its existence and lethality, the original Gothic images of the Late Middle Ages were replaced by images of terrible ogres. Examples could be listed as spooky Hell and Satan images, the death dance, the Four Horsemen of the Apocalypse, the image of the Grim Reaper in the form of a scythe and skeleton. In fact, with superstitions, victims were sought to be held responsible for the plague. People who were in despair believed that they should take God's heart (Porter, 2016: 26). It can be said that this belief is the provocative element of the cat and witch hunt, the Flagellant stream, and the killing of Jews.

After the second plague pandemic, *death* became the most important theme and figure of art. Dozens of paintings, engravings, and sculptures from the time of Black Death were a compelling indicator of people's psychological responses to this shock. European art has emphasized death for a long time and especially its most horrible and terrifying aspects. Skeleton figures and decaying cadavers, equipped with swords and sickles, were depicted to cover people of all classes. While Europeans commissioned sculptors to decorate their graves before Black Death, at the end of the 14th century, new graves depicted the decay of corpses in detail. In addition, two Catholic saints, St Sebastian, and St Roch, were seen across Europe as saints who protect people from plague. Medieval paintings typically depicted St Roch with a dog and a big cucumber (bubo) on his thigh (Slavicek, 2008: 99-102).

Conclusion

As a requirement of his innate feelings, man has desired to live safely in every period of history, to feed his stomach and to continue his generation. One of the most important factors that threaten these three basic demands of the human being is epidemic diseases. In this regard, people have had to fight epidemic diseases throughout history.

We can say that plague, cholera, flu, malaria, flower, yellow fever, typhoid, typhus, measles, syphilis, and tuberculosis are epidemic diseases that cause large-scale human deaths throughout the history of humankind. Among these, plague, cholera, and influenza demonstrated pandemic spread many times during the ancient times. Plague and cholera lost their menacing character before the 20th century. This is not the case with the flu pandemic. Pandemic flu outbreaks continue to occur with different types at different times.

The most thrilling and frightening part of epidemic diseases in history is that their nature, sources, and treatments were not known. This frightening aspect continues today as the viruses that cause the disease are constantly mutated, and each time they face humanity differently. Therefore people have been

forced to fight an invisible enemy that they could only observe its existence from the destruction it has created, thus being unaware of it for a long time. This state of uncertainty and being helpless in the face of the disease has caused it to gain a holy nature thus being considered as a god or goddess in societies with multi-god religions. In Christian societies, it was sometimes considered one of the Four Horsemen of the Apocalypse, who was involved in the battle of good and evil, in Doomsday, sometimes as a misfortune of God caused by a Jew, and sometimes as a sinister of a cat or witch. The Islamic world, on the other hand, believed that the epidemic came from Allah, but preferred a more rationalist realistic way than the conditions of its era, such as social isolation. The conviction that people who died from the epidemic would be regarded as martyrs increased the holy nature of the disease, causing it to be perceived as a reward rather than a misfortune.

Regardless of the belief system, geography or society, the only real thing is that there is no way to get rid of this insidious enemy without knowing the disease, knowing its origin, learning the methods of diagnosis, treatment, and prevention. When people realized this, they were able to ground the fight against epidemics to a more rational line.

The absence of the plague after England in 1665 was achieved by the massive death of the fleas that spread the plague germ and its carrier mice during the 1666 major fire. The disease was brought under control when new buildings were started to be built in such a way that this pest did not live comfortably. It was understood that the cholera microbe passed on to people with dirty drinking water and spoiled food, so developed countries and conscious societies were able to get rid of cholera. The disease was no longer a global threat when malaria was understood to be a scourge of stagnant waters and mosquitoes and the drug was found and the marshes were dried. The source of smallpox was determined, and people gained immunity thanks to traditional vaccine applications and this lethal disease did not show a pandemic spread in history. People have understood in the past and today by paying a heavy toll that the mystical and magical ways created in their belief systems are no longer useful to get rid of the epidemic. It is for this reason that there was distrust in the Christian world against church members who recommended irrational ways to get rid of the epidemic and preferred to pray directly to God. The Catholic Church paid for the deviation of moral and non-religious ways to prevent epidemics with the start of reform movements.

Although the quarantine applications, microbiological, virological, pharmacological developments and vaccines make people more advantageous in many diseases, the possibility of a new virus or bacteria that will suddenly appear and produce pandemic outbreaks causing mass deaths will ever continue to exist.

If we take a retrospective outlook for today by making use of our experience throughout history, we can say that the world has changed in many ways after

each epidemic. Plague epidemics recurring after the plague of Justinian, which started in 542, led to the realization that diseases were contagious in the first years of Islam. After the plague epidemic of 1346-1352, the non-religious practices of the Catholic Church members in Europe started to be questioned and the Reform movements started when the same practices continued in the ongoing process.

The Aztec and Inca societies, which are the indigenous elements of America, compared the religion and gods of the Spanish or Portuguese people who came with little military power and occupied their lands in the beginning of the 16th century with their gods because of the smallpox that infect them but did not infect their enemies. European societies grasped the importance of hygiene by paying a heavy toll. Malaria and plague dictated living in healthy environmental conditions, consuming healthy and clean foods for cholera, people, and the benefits of institutional quarantine practices.

Epidemics have left such deep traces in society and human life that there are so many songs, dances, poems, novels, legends, jokes, and laments that have been fictionalized, written, stolen and sung with epidemic patterns. Perhaps the pandemic flu epidemic experienced today will end with a few more attacks. However, it should not be forgotten that the experiences and the events we have faced throughout history will change in accordance with today's conditions and manifest themselves in many areas.

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