

ORIGINAL ARTICLE

The Analysis of Demographic Changes caused by Epidemics and Actions of the Rulers in Hamedan during the Qajar Era

Abstract

Worldwide, infectious diseases have been one of the main factors of premature deaths for a long time. Due to the lack of proper social and cultural conditions, Iran suffered a lack of hygiene, particularly in provinces, until the end of the Qajar era. As Hamedan was located on the east-west transporting routes, it was exposed to infectious diseases mainly because of the presence of foreign and domestic merchants as well as traders and pilgrimage caravans. This study is to investigate the outbreak of infectious diseases in Hamedan during the Qajar period and their consequences on demographic transformations and the mortality rate. Regarding methodology, a historical, descriptive-analytic method has been used in the current study, and the data has been gathered using the documentary method. The documents and studies show that infectious diseases caused a population decrease in Hamedan province in the Qajar period. It is worth mentioning that the pandemics of infectious diseases, particularly Cholera and Plague, occurred in Hamedan during this period, one of the primary reasons for the population decrease in this province. Findings show that public ignorance, lack of proper hygiene, primitive, inappropriate routes, as well as poor performance of local and central rulers, primarily affected the increase of mortality and decrease of the population rate.

Key words: Hamedan, Qajar, Population decline, Communicable diseases, History of medicine, Iran

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Introduction

Health is considered one of the influential variables in the growth and development of nations. Hygiene is one key factor in the health of human societies. According to some thinkers, investment in human forces and population is a prerequisite for the development and progress of a nation. This can be aggregated by improving the public health level of society. Iran, however, has constantly been exposed to many transformations and problems, including war and natural and human disasters throughout history. Meanwhile, infectious diseases were responsible for most social and economic problems in this region. This brought about many damaging consequences for Iranian society (Fatemi, et al., 2013, p. 80). Moreover, the conflict between traditional and modern medicine, where the former insisted on the traditional principles of medicine, the prevalence and combination of superstitions with traditional medicine, and the rulers' lack of attention to the health issue at the beginning of Qajar, worsened the condition. During this period, the reluctance of traditional people to accept the modern lifestyle and the development of public health increased the death rate, decreasing the population rate in the country. Health reforming measures that formed the basis of the government's agenda in the field of health, was shaped at the same time with the arrival of the flow of changes in Iran. During this time, the issue of health and hygiene was given special attention by the government's modernization programs, so in the modified programs of Abbas Mirza and Amir Kabir up to the Constitution and after that, several scattered measures regarding health and hygiene were taken by thinkers and reformers with the aim of improving the healthcare condition in Iran.

Hamedan is located in the western region of Iran, next to the Central Zagros. Central Zagros, from a long time ago, has embraced a region along the Great Khorasan highway, considered a common route from Baghdad to Hamedan. This route is the most important communication channel between Iran and Mesopotamia, which has been used for exchanging goods and information, military campaigns, pilgrimage, and business trips (Zarei, and Rezaei, 2018, p. 4). For a long time, there were ongoing commercial and cultural relations with the Ottoman government in this region, particularly during the Qajar period. Hence, the inhabitants of this land have been in commercial and economic exchanges with the Ottoman government. (Al-Atabat Al-Aliyat). Although these relations were considered a privilege and an economic advantage for the region regarding health, they caused many problems for the people of urban and rural settlements. The most crucial issue caused by this relationship was the transmission and spread of infectious diseases, such as Cholera, Plague, and smallpox, from the lands of the Ottoman government to the region and the whole country. Problems regarding structures and infrastructures, including inappropriate routes, the lack of communication tools, transportation, and particularly health and treatment facilities, increased the spread of infectious which led to intensifying the death rate and decreased the population during the years of the Qajar rule in Hamedan. This issue led to even more difficulties regarding controlling and treating these diseases, and their destructive effects on various aspects of people's lives became more apparent, making it exhausting and deadly to endure (Wills, 1990, p. 177). The present study aims to find an answer to the following questions: "How was the health situation in Hamedan during the Qajar era, and what infectious diseases spread in this area" and: "How did the spread of infectious diseases affect the mortality and demographic changes in that region and period." This research was carried out using



the historical-descriptive-analytical method and evaluated the issue based on historical sources, travelogues, press, and documents. The historical method was used to gather the data, with a purposeful and objective reconstruction of the past carried through the collection, evaluation, determination of authenticity and arrangement of incidents in order to prove the events and obtain a defensible outcome.

Reviewing previous research shows that no comprehensive and noteworthy studies have been conducted regarding the state of infectious diseases and population changes in Hamadan province. The health and medical condition of Hamedan has merely been mentioned very briefly in the treatises and articles written by physicians within the scope of the research. There are a limited number of studies regarding the health and hygiene and the spread of infectious diseases in the region of Hamedan, namely the thesis written by Elham Paroazi (Paroazi, 2021, p. 41). The strength of this research lies in the fact that it has used documents and the local newspapers; however, it has neither chronicled the effect of diseases on different aspects of people's life nor recorded the diseases of that time. Another thesis titled "Investigation into the state of medicine and the doctors of Hamedan in the second Pahlavi", carried out by Reza Karami, briefly refers to the state of health and hygiene during Qajar. An article titled "The causes and consequences of the famine caused by the First World War in Hamedan" by Alireza Sufi and Shahram Ghafouri is also the other research that mentions WWI as the reason for the spreading of infectious diseases in Hamedan during the late Qajar period.

The geographical location of Hamadan

Hamedan province is one of the western provinces of Iran in an area of 20,000 km west of Iran, with a highland climate considered one of the internal mountains of the Zagros Mountains. Hamedan was destroyed and rebuilt three times during the attacks of Alexander, the Arabs, and the Mongols, respectively. In ancient times, this city was the Medes' capital and the Achaemenids' summer capital. It was considered an important city on the leading road network between the East and Mesopotamia, well known during the Seleucid, Parthian, and Sasanian times (Figure 1) (Beig Mohammadi, 2018, p. 83).



Figure 1. Map of Ozen Flanden and Pascal from Hamadan city and its connecting roads in 1841 (Flanden, 1851, p. 24)



Health, hygiene, and infectious diseases in Hamedan during the Qajar period

The Qajar period was in poor condition in terms of health and hygiene. The lack of healthy drinking water is one of the indicators of such an impoverished condition. In the past, all over Iran, even if the water in the aqueducts was not polluted, there were many ways to pollute the water when it entered the cities. For example, due to the lack of a proper wastewater system and waste disposal throughout Iran, passing through city streets, drinking water was easily contaminated by bacteria. Cemeteries were often built next to waterways supplying the city's drinking water. In Hamedan, the biggest cemetery was located next to the main waterways and the city entrance, which caused the waterways to be heavily polluted and exposed to infection due to the soil contamination and washing of dead bodies. This increased the spread of infectious diseases (Afkhami, 1998, p. 25). City roads were deplorable. Trashes and inedible parts of slaughtered animals were left in the passages, and no measures were taken to clean these passages (Hajianpour, and Hakimipour, 2017, p. 18).

There were no positive fundamental changes during the Qajar period due to a lack of proper social and cultural background, particularly in provinces. At that time, all the medical affairs, including hygiene and treatment methods, were based on traditional principles (although with the reign of Naser al-Din Shah, a relative change in these two components appeared. This was limited to the capital and a few provinces during the short term of the chancellorship of Amir Kabir (Paroazi, 2021, p. 71).

In the Qajar period, the authorities did not concern themselves with the country's healthcare. So, the public healthcare condition of society was a mess. Different types of pollution contaminated drinking water due to passing through city channels and dirty passages. The roads, likewise, were in poor condition. Doctor Feuvrier, arriving at a clean region on Esfahan-Hamedan road, was surprised since he came to believe that filth is normal in all the settlements of Iran. In addition to the lack of public health, personal hygiene arose from people's ignorance of the importance of most basic hygiene principles, which worsened the spread of diseases (Azimi, 2010, pp. 145).

Caring about public and personal health and hygiene and prevention of diseases was not regular and permanent. Although some authorities expressed exceptional sensitivity towards the observance of public health even in normal conditions, due to the lack of facilities, their achievement was insignificant (Anwar, 2015, p. 49)

Even though at the end of Qajar, institutions like Baladiyah (municipality organization) were established in order to deal with the health and hygiene problems in cities, in practice, these measures were futile due to issues, such as insufficient funds to advance the objectives and eradicate people's ignorance and naivety. It can be said that Iranians' ignoring personal and public health and hygiene continued until the 20th century (Paroazi, 2021, p. 177).

Factors influencing the spread of infectious diseases in Hamedan

Illnesses do not strike humans suddenly from anywhere, by chance, or out of the blue. Instead, there are always some reasons behind the manifestation and spread of the disease. Although pathogens are the main cause of infection, it is not sufficient since, in addition to the pathogen, some other poor conditions are also needed (Mehri, 2002, p. 881)

Inappropriate and rough roads, suitable for animals to cross, influenced the spread of infectious diseases (Ketabi, 2002, p. 37). In a letter from Ottoman Empire, it was writ-



ten that since the western province did not take any measures to construct the paths and routes of Qasreshirin and Kermanshah, and Hamedan, there were worries that the caravans would face problems that year (Manuscript Box 25, Folder 61, Serial 214, 1913). People's lack of access to food due to the high cost of renting carriages contributed significantly to famine and human casualties. The lack of standard roads made it difficult for food transportation to war-torn areas and reach people suffering from famine. Apart from animals, there were no other means of transportation in this area, and even that was looted by the Russian and Ottoman forces (Sufi, and Ghafouri, 2017, p. 19). Muleteers indicated that the reason for the increase in road fares were the guardians of the way, who demanded vast amount of money along the way, and the guardians said they did so according to the order of the Kermanshah governor. The British embassy also demanded the suspension of these transactions and ease of transportation of merchandise. The British Embassy asked the western provinces to resolve the disturbance on the Baghdad Road, prohibit the road tolls that caused the increase in fares and the difficulty of transporting merchandise and food, and inform the result of the measures taken to the British Embassy. (Manuscript Box 45, Folder 13, Serial 137, 1911) Arfa al-Dawlah, Iran's ambassador to Istanbul, wrote about Iran's rough and inappropriate roads. At that time, because of transportation difficulties, it happened that while in one province, the fruit was plenty and got rotten; in other regions, people longed for a fruit pit. During the cold seasons, with frost and rough weather, the roads were covered with mud so much that the animals carrying goods would fall in it and could not arrive at their destination. As a result, malnutrition due to the lack of food was a reason for the spreading of infectious diseases (Sharifi, Zargarinegad, and Forozesh, 2016, p. 82).

The second and most important factor in the spread of infectious diseases was that the authorities did not care about the health and hygiene of the country. This neglect was to such an extent that with the outbreak of infectious disease, the king, the authorities, the rulers, and the governors in different regions hid in the palace or were among the first people to leave the city instead of considering solutions to end the deadly disease (Manuscript No. 29500-5426-127, 1863). It is obvious that the government of the time was directly responsible for the spread of infectious diseases. However, with the disease outbreak, the rulers took the escape route and, by deception and hiding the truth, literally left the people in the middle of a disaster. Even the governor's representatives refused to inform other countries about the crisis because they feared those countries might block the way. They also refrained from announcing quarantine which required collecting food supplies to avoid undergoing extra expenses. (Nowzari, 2015, p. 14)

The third vital factor in the spread of disease in the Qajar era in the Hamedan region was the lack of personal hygiene, leading even further spread of diseases. Forbes Leith, being in close contact with the rural population as the only source of modern medicine for years, pointed out that people were generally ignorant about hygiene, and almost all lived their lives surrounded by unexplainable filth. There were false and hidden misconceptions about health and hygiene in their tradition, and it was a laborious process to remove them. Any effort to improve their condition was fraught with difficulties.

One factor regarding people's ignorance about personal hygiene, which played a significant role in the spread of the diseases, might be their reluctance to wash clothes and use contaminated water for drinking and cooking. In addition, people's misunderstanding of Islamic rule played a major role. For instance, they believed that any flowing water was



pure and could be used for drinking. For example, a corpse that died of typhoid fever was bathed in the stream, and a few yards down, women were filling their brass water vessels for home use. That was because the general public did not believe in the contagiousness of some diseases and did not separate the sick from the healthy (Floor, 1923, p. 75). That was one of the most important factors of disease transmission, especially Cholera. Local residents held that the aqueduct waterway passing by the hospital would cause lots of sickness due to introducing contaminants into the city's water (Manuscript Box 37, Folder 1, Serial 2, 1917). Children in a traditional school drank water from the same jar. Men who gathered in coffee houses smoked the same hookah, surging the spread of infectious diseases (Ittehadiyeh, Shams, and Ghafari, 2013, p. 42). Doctor Mahdi Qudsi, the head of Pasteur Institute, wrote about a lack of personal hygiene while visiting one of his relatives who had typhoid disease: "I witnessed that the landlord washed the basin used by a typhoid patient in the flowing water of the aqueduct while the kitchen utensils and dishes were piled up to be washed in the same water" (Azimi, 2010, pp. 154).

Public ignorance and disregard for personal hygiene caused urban or rural settlements to be usually unhygienic. Huts, farmhouses, and traditional temporary dwellings called *Kapar* were simultaneously a shelter for humans and animals, which proved to be disastrous. (Floor, 2008, p. 79)

In his trip to Hamedan in 1945, Zahir al-Dawlah described the health status of Hamedan homes in his memoirs as follows: the houses were generally in terrible condition, without running water, and almost uninhabitable (Afshar, 1973, p. 89). Public baths were ready for the spread of infectious, respiratory, and skin diseases as well as fungal infections (Molai Tovani, and Gholampour, 2013, p. 139). At times, the baths' water was so dirty that it became condensed and could not be called water. All kinds of people, even those suffering from contagious diseases, entered the pool and washed their bodies in it (Soraya Newspaper, 1896, pp.12-13). In 1891, Francis Francis Foad Leith believed that one critical factor in the spread of different diseases among the people of Lenga near Hamedan was the water of pools in bathhouses that was changed only three times a year (Nadim, and Babadi, 2018, p. 105). Other factors that caused the spread of infectious diseases were the bathhouses of those times. In Qajar times, people went to public baths, and these places were ready to spread infectious and fungal diseases. Then, a person, after such a bath, would naturally be prone to contracting infectious diseases. Such a community has to go a long way to improve its personal hygiene (Floor, 1923, p. 75).

The fourth factor intensifying the spread of the disease was the improper transportation of the corpse to *Al-Atabat Al-Aliyat* for burial. In his travelogue, Henry Binder wrote about Iranian pilgrims' mass transportation of corpses. Although these caravans carrying corpses usually stopped about five kilometres from the villages, they infected their surrounding areas. Besides, Iranian pilgrims transferred some of the infectious diseases to Iraq during their visits to that country, and sometimes, they were exposed to contagious diseases and brought them to Iran (Atash, 1900, p. 78). According to the documents, some people smuggled the newly dead or putrid bodies to *Atabat Al-Aliyat* for burial (Manuscript Box 38, Folder 45, Serial 11, 1907) (Figure 2). Believing in superstitions was another factor in the spread of the diseases. During the Qajar period, some beliefs and customs indicated the society's poor public culture (Tajbakhsh, 1993, p. 872). Those from the low-income and illiterate classes refused to visit foreign doctors during sick-



ness. They would, instead, refer to fortune tellers and spell makers (Hasan Beigi, 1998, p. 96) either because of financial poverty or the lack of trust in modern medicine. People believed in traditional treatments, along with some superstitions attached, in the Qajar era. This was considered an important obstacle in paying serious attention to new European medical findings (Hajianpour, and Hakimipour, 2017, p. 27). On the other hand, the instruction to prevent the spread of Cholera was sent to the provinces, including Hamedan, in 1929. However, most people refused to follow the instruction. They, instead, adhered to saying the fear prayers (salat-ul-half), or the plague prayers, and hanging them and not mentioning the name of the disease in front of the children. They also sought refuge in the dua-vassal praying. It is said that in Hamedan, the treatment of malaria in folk medicine was as follows: if someone was suffering from a malaria-like fever, he was taken to the spell maker and asked to lower the patient's fever. Another superstitious method was to keep the patient under a willow tree for several days to heal (Talai, Rajabnejad, and Tajmiri, 2017, p. 125). Uneducated people had superstitious beliefs about celestial bodies and related the occurrence of illness to the influence of the Canopus star, which was visible on the horizon before sunrise. Other healers also considered the epidemic the result of God's anger to punish the people's sins. They tried to cure the disease by reciting the verses of the Quran using the clay taken from the tomb of Imams without observing the hygiene standards. Ignorance was why people did not act against infectious diseases (Floor, 1923, p. 125).

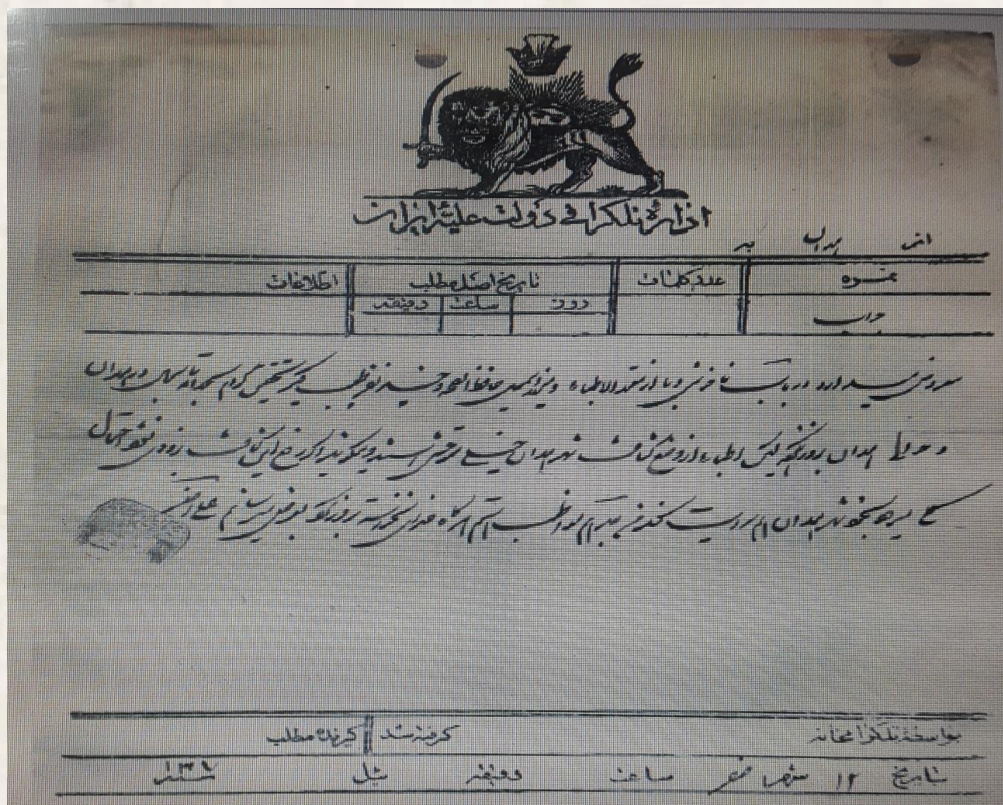


Figure 2. Doctors fear of the dirtiness of Hamedan city and the possibility of the Cholera spreading to other areas. (Manuscript Box 38, Folder 45, Serial 11, 1907)



Actions of the Rulers to Prevent Infectious Diseases

There are different accounts and documents about the factors influencing demographic changes. Some of these factors that played their role in reducing the disease and stabilizing the population of the Hamadan region during the Qajar era are mentioned below:

Sending students abroad to learn modern medical sciences.

During the Qajar period, when modern doctors came to Iran and the Iranian students who graduated in modern medicine returned to the country, a new wave began in dealing with infectious diseases (Askarian, 2016, p. 3).

Abbas Mirza was one of the few authorities who soon realized the underdevelopment of his country in comparison to other developed countries. He sent a group of students to Europe to study medical sciences and learn new techniques. (Kasravi, 1401, pp. 25-26) Mohammad Shah Qajar also sent five students to Paris according to the eighth decree 1941 (Roustaei, 2004, p. 43). This had an influential role in reducing human casualties in the country years after Qajar.

1- Vaccination to reduce the spread of the disease

As smallpox was familiar in Asadabad, Saf al-Haq, one of the doctors of the late Qajar era, was sent from the health administration of Hamadan to this city to fight smallpox. Therefore, he attempted to prepare the smallpox vaccine. To this end, having collected the crust over the wounds and added some ingredients, he weakened smallpox and made it usable as a vaccine (Feizi, 2010, p. 183).

In Hamadan, during the hot summer months, he announced the closure of smallpox vaccination since hot weather was harmful to children. He postponed free smallpox vaccination until the beginning of autumn. In one of its issues, Etihad newspaper quoted Zia Atba, the director of free smallpox vaccination Hifzo-shah, that free smallpox vaccination, supported by the government and child health protection, supported by the parliament, was closed and would start its operation the following month. It asked the parents and emphasized that if they paid for the smallpox vaccination, they should refer to the health center to get the money back. "And if anyone asked for money, please inform us since it is not permissible" (Etihad Newspaper, 1904, p. 11).

2- Establishing a hospital to treat patients

During the first half of the Qajar period, there was no hospital in Iran except one in the Imam Reza shrine. However, in the period before Qajar, there were a number of hospitals in several cities, such as Isfahan and Tabriz; but they stopped their activity in the 18th century. In 1307 AH, Ain al-Sultaneh announced the establishment of the Dar al-Shafa school (school of medicine) in Tehran, which was built by Mohammad Shah from 1834 to 1848 AD (Floor, 2008, p. 249). In Hamadan (Etihad), the first modern clinic was built next to Elias School. In his memoirs, Zahir Al-Dawlah referred to the American clinic and hospital in Hamedan, which was built in the wealthy northern district of the city and would accommodate 24 patients (Afshar, 1973, p. 133).

Hamadan municipality was established thanks to the efforts of the governor and the honorable chairman of the municipality. They started to smooth and clean the alleys from the Qazvin gate for the carriages to pass easily through (Etihad Newspaper, 1913, p. 4). The municipal council regularly held meetings once a week in Dar al-Hokuma and ne-



gotiated issues related to the municipality. After coming to a conclusion, they proceeded with operations. Among them, one of the critical issues of public interest, related to the health of the residents, and under the intervention and opinions of Dr Funk, a member of the general assembly of the municipality and the head of the Department of Health Care and the American Hospital, was to identify the diseases that started in different seasons of the year. If the prevalence of any disease was high, actions were taken to prevent it with the available facilities. Therefore, the municipal assembly had decided that the mission of the commissioners of magazines was to report the central affairs by name, protocol, and action, as well as the determination of the disease and the doctor and the duration of the disease and report the municipal assembly to the head of the municipality on a daily basis (Etihad Newspaper, 1904, p. 45).

3- Establishing quarantine

Based on the documents of the National Library, in 1298, Cholera was widely spread in the Ottoman country and simultaneously started in the borders of Iran and the Ottoman Empire. People were frightened by the dirtiness of Hamedan city to the extent that it was said that if the dirt had not been removed, Cholera could have spread to Hamadan city, as well (Manuscript No. 295-7765-00-0135, 1298).

The order to prevent the spread of Cholera was sent to provinces and borders in 1298. Based on that, if a member of the house caught Cholera, the person had to be kept under the shade of trees in good weather, and others had to avoid any physical contact with the patient; the family members had to leave the house for two weeks, disinfect the house with water, lime, sulfur smoke, alum, salt, and leave the furniture in the open air for 15 days. Basically, in a cholera-stricken city, all people had to leave their houses and live in tents separately from each other. It was better to go out of the city, be careful with their nutrition, and avoid overeating fruit (Natiq, 1978, p. 30).

4- The obligation of certification for medicine

This issue dates back to the time of Amir Kabir chancellorship. In 1280 AD, for the first time in the history of Iran, doctors were required to have a medical certificate to prevent others from calling themselves medical doctors. In 1280 AH, Dr Polak and, after him, Dr Toluzan were appointed to supervise the work of doctors and to give them certificates for medical work (Admit and Natiq, 1975, p. 336). Those who completed the medical courses according to the curriculum of that time would sit for an exam, and if they accepted, they would graduate and be awarded a certificate. This certificate had four sections, each related to a part of the field of medicine that was filled by the professor after the exam. Thus, the diploma was known as the four-boxes diploma, the owner of which had permission for medical practices. In addition to that, the graduates of medicine were given a medical license in which the date of each person's permission to start practising medicine was mentioned (Heideh, and Wafari, 2005, p. 146) Hakim Seyyed Hassan Madani, known as Hakim Safal Haq Hamedani, after returning from his trip to India, began practising medicine in Hamadan and received a medical certificate from the Ministry of Education and became a smallpox vaccination doctor and a member of the Health Department in 1314 (Feizi, 2010, p. 183) (Figure 3).



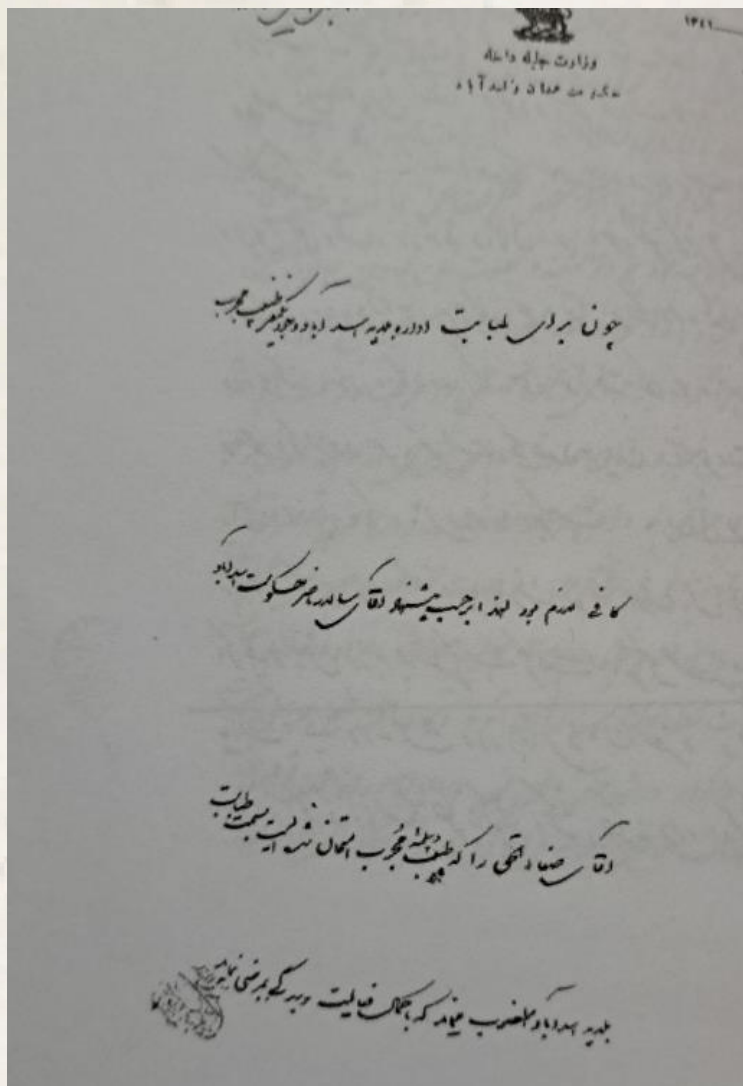


Figure 3. Certificate of professional doctor, Hakim Seyyed Hasan Madani Safa-alhaq for smallpox vaccination in Hamedan (Feizi, 2010, p. 173).

5- Sanitizing business environments

During epidemics, court heralds warned people to burn the clothes of the dead, filter the drinking water as much as possible and lime the wells regularly. However, people did not pay proper attention to these recommendations, and in the coastal cities, they even threw dead bodies into the sea. This caused the spread of the epidemic and an increase in casualties. The government was practically unable to convince people to observe the hygienic recommendations. (Yari, and Faraji, 2021, p. 79).

Although Nawab Amirzadeh Abdul Baqi Mirza, who was the agent of government on behalf of honorable agent Prince Mubad-al-Doula, Tahmasab issued some orders to prevent the spread of Cholera in the city, Hamedan was affected by the disease. It is reported that since the dirtiness of the city mainly caused Cholera, slaughterhouses were banned from working inside the city and were forced to move outside the city. In addition, he emphasized that it was necessary to remove garbage from alleys and neighborhoods, sweep and sprinkle water in the alleys and keep the alleys and houses clean in order to



decrease illness and potential factors of Cholera in Hamedan. (Vaghae Etfhaghea Newspaper, 1853, p. 784) (Figure 4)



Figure 4. Measures taken by the ruler of Hamedan regarding health and hygiene (Vaghae Etfhaghea Newspaper, 1853, p. 784)

6- Establishing associations of hygiene

Dr. Toluzan insisted that Naser al-Din Shah establish a health and hygiene association to protect public health with the help of the European medical community. It was built by the order of the Shah. Doctors were gathered every week under the aegis of the Ministry of Science with the duty to attract the attention of the officials of all parts of Iran to prevent disease to total scientific accuracy and stop the spread of the diseases. Experienced doctors with the title of Hafiz al-Saha (guardian of health) from this association were appointed in every town and province to improve public health, treat the people, and send their reports to the central association. They were required to begin their work with compulsory smallpox vaccinations (Floor, 2018, p. 95).

Hamadan government and city police (Manuscript Box 29, Folder 10, Serial 99, 1915) were informed through a letter about the possibility of Cholera in Hamedan due to the spread of this disease in Qazvin and the negotiation between the head of the Health Association and the Minister of Foreign Affairs went on regarding the need for medical action by the Assembly in Hamedan and issuing order to Zia-Al-Atba the medical doctor of smallpox vaccination about cleaning the city. Cholera caused casualties every year in the provinces of Iran, and lately, it was intensified in some places, even in Tehran. Thus, in 1298 A.H., his highness Ain Al-Dawlah, the former Prime Minister of the Health Association, signed for establishing an office to produce and prepare the substance for smallpox vaccine for all the regions of Iran. In the same year, 250 tomans, equal to one



thousand frank, were paid for buying the essential equipment for founding the mentioned office. (Manuscript Box 22, Folder 5, Serial 110, 1916)

The outbreak of epidemics and its effect on the demographic changes of Hamadan during the Qajar era

The spread of infectious diseases was one of the factors affecting the demographic changes of the Hamedan region in the Qajar period. Contagious and deadly diseases, such as Plague, malaria, smallpox, and Cholera, killed a large number of Iranian people, particularly in the western regions of the country, almost every year, which itself caused population decrease, hoarding, famine, poverty, and destitution (Azimi, 2010, p. 149).

Disease outbreaks in the Qajar period hurt children the most. Some of the remaining reports about this issue demonstrated the shocking death rate of children. Estimated statistics indicated that the death rate of children was 50% every year (Floor, 1923, p. 75). Iranian children suffered from autumn cholera by the end of two years, especially when they were weaned and died eventually after a while. At least a third of urban children died of this disease, especially in the autumn (Pollock, 1990, p. 139).

1- Cholera

Cholera is a deadly and severe disease spread by a particular germ existing in the water. This disease spreads quickly and kills a large number of people; sometimes, unexpectedly and in a blink of an eye, it kills many people in just a few hours (Amid, 1991, p. 1047). Cholera was one of the endemic diseases of Iran. It used to break out almost every year or every two years and disturbed people's life and social activities. Victims of Cholera were mainly the poor since they were in an inappropriate situation in terms of their health status, as well as food, water, and nutrition. (Fourier, 1963, p. 296). Cholera was originally a contagious disease in parts of the Indian subcontinent around the Ganges River. This disease was transferred to Russia and then to other countries through trade routes (land and sea) (Natiq, 1978, p. 289). Among all the diseases that human beings suffered in the 19th century, Cholera has been titled the most horrifying (Talai, Rajabnejad, and Tajmiri, 2017, p. 134).

In Jumadi al-Awwal of 1850, during the reign of Naser al-Din Shah, and in Muharram of 1851, Cholera that started in Kermanshah spread to Hamadan and caused heavy casualties (Ittehadiyah, Shams, and Ghafari, 2013, p. 19)

In 1288 A.H., grain famine and disease appeared all over Iran, especially in Hamadan and Khamsa (Sanandji, 1988, p. 214).

Dr Feuvrier was in Iran between 1306 and 1309. He wrote that according to the news received, Cholera appeared in the western borders of Iran through Baghdad and then reached Hamadan (Fourier, 1963, p. 215).

In Hamedan, Ismail Khan, the guardian of health, in a report on the 24th of Rabi-ul-Thani, 1307 A.H., wrote: "These days the number of infected people cannot be accurately stated because most of the patients do not refer to the doctor and die within a few hours. The disease is very serious; may God have mercy on us." (Manuscript No. 295-007765-0035, 1879)

The ambassador of the Russian government in Tehran wrote a report to the Ministry of Foreign Affairs of the government he was subordinated to on the cholera disease that was present in some parts of Iran: "There is still an outbreak of Cholera in three parts of Iran,



namely in Malair, Hamadan and Nahavand. From the 13th of the third month of autumn to the 25th of that month, eighty-seven people died from this disease in those three cities.” (Akhtar Newspaper, 1928, p. 27).

The seventh epidemic occurred in 1903 A.D. (1321 AH); That is, when Cholera entered Iran from Iraq and western Iran and caused many casualties in Hamadan (Talai, Rajabnejad, and Tajmiri, 2017, p. 134).

Sadr Ashraf, the friend of Salar al-Sultaneh, who was later the ruler, wrote about the outbreak of Cholera in 1904 during the reign of Ahmad Shah in Hamedan as follows: “Cholera, which entered Iran from Arab Iraq, after spreading to Kermanshah, from there it spread to Malair, Asad Abad and Hamedan, where it stayed for four months. The city’s casualties reached 400 people daily (Sadr, 1985, p. 113). Definitely, the rumors of the disease caused more and more people to panic, and Hamedan became deserted” (Iran Soltani Newspaper, 1904, p. 19). Farid al-Malek Hamedani wrote in his book of memories about the outbreak of Cholera in Hamedan that on the thirteenth of Shawwal 1328 A.H., during the reign of Ahmad Shah, the disease of Cholera that had spread in Hamedan was not yet wholly eradicated. It was recorded that 40 people from the active population of Hamadan City died daily. People from every group and class, who had the chance to leave, went outside the city and to the countryside and took the disease with them to those areas (Hamedani, 1975, p. 54) (Table 1 and Figure 5).

Table 1: Spread of Cholera in Hamedan in the Qajar era

Year	Reign period	Reported disease	Duration	Daily estimation	Casualties
1848	Fath Ali Shah	cholera and Plague	Four years	10 people	15000
1850	Naseroddin shah	cholera	One year	15 people	3000
1870	Naseroddin shah	Cholera in Hamedan and surrounding	Three years	A large number	5000
1928	Naseroddin shah	cholera and Plague all over Iran as	unknown	A large number	4000
1903	Mozafaraldinshah	Widespread Cholera	-	A large number	2000
1910	Ahmad Shah	Widespread Cholera	One year	40 people	7000
1914	Muhammad Ali Shah	Cholera in Hamedan	Four months	400 people daily	4800

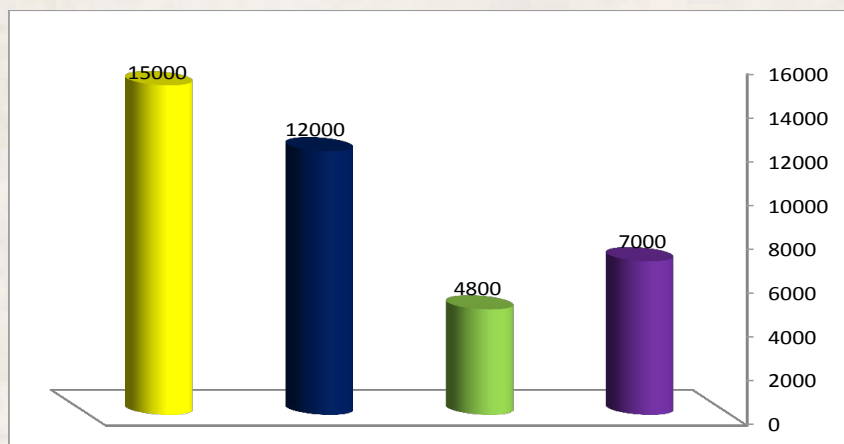


Figure 5. Statistics of human casualties caused by Cholera in Hamedan during the Qajar era



2- Influenza

Influenza is a highly contagious infectious disease that is said to be caused by a virus (Dehkhoda Dictionary, entry of Influenza). This disease was seen in the Iran Qajar era and was probably the Spanish flu pandemic. Apparently, it affected villagers and shepherds more than urban populations due to their lifestyle and job condition; the former was more exposed to the cold and got sick (Talai, Rajabnejad, and Tajmiri, 2017, p. 192).

During the Naser al-Din Shah Qajar empire, among all the available reports about the influenza epidemic, the most detailed news, in this case, was presented by Dr Toluzan, who was Naser al-Din Shah’s special physician. As he indicated, no city was safe from the storm of this epidemic. (Paroazi, 2021, p. 40).

In the west of Iran, the wave of Influenza started in 1918 in Qasr Shirin on Kermanshah Road, and Hamedan fell ill on September 2. Local reports indicate that in this city with a population of 30,000, the influenza epidemic became widespread and caused the death of 1,000 people. At the end of the Qajar era, the death rate from the influenza epidemic among different people was very high in most parts of Iran. For this reason, the dead bodies were carried in carriages, and the bodies were piled up in cemeteries. The lowest estimate was 2,000 deaths within three months (Floor, 2018, p. 125) (Table 2 and Figure 6).

Table 2: The spread of Influenza in Hamedan during the Qajar era

year	Reign period	Reported disease	Duration	Estimation of causalities	Total estimation of casualties during the disease
1928	Naseroddin Shah	Spread of Cholera in Hamedan	Three months	4 people daily	3600
1919	Naseroddin Shah	Spread of Cholera in Hamedan	One year	4 person daily	1000
1917	Ahmad Shah	Spread of Cholera in Hamedan	Three months	2 people daily	2000

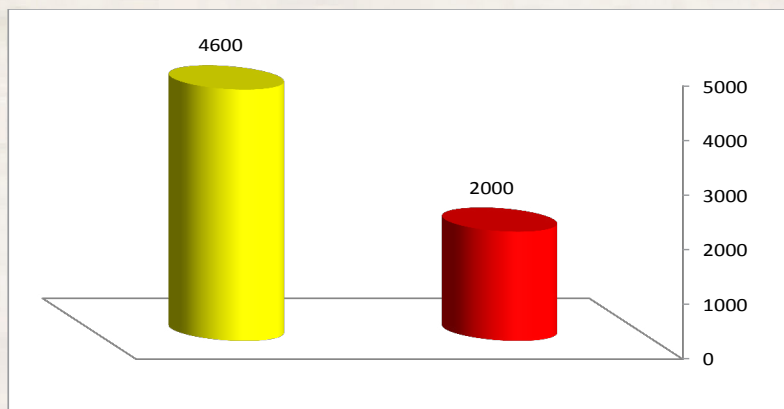


Figure 6. Statistics of human casualties caused by Influenza in Hamedan during the Qajar era



3- Plague

One of the oldest diseases in Iran with massive destructive effects on the human population of this country throughout history was Plague. The Plague, or black death, was one of the contagious diseases that repeatedly spread in Iran and caused the death of numerous people. This disease was not native to Iran, and in every epidemic, it came from other countries, such as Iraq and Saudi Arabia, and through pilgrims who travelled to these regions, especially the Persian Gulf and the Western region (Talai, Rajabnejad, and Tajmiri, 2017, p. 125). Throughout history, plague outbreaks were reported in almost all regions of the country, especially near the borders, in the north, east, and west (Shahraki, Carniel, and Mostafavi, 2016, p. 12).

Plague disease spread for many years in all countries. It spread to all regions of India and killed thousands of people. The number of casualties was so high that people held a plague prayer to cure the disease (Atlas Newspaper, 1895, p. 411).

The Plague spread throughout Iran in 1245 A.H. during the reign of Fath Ali Shah Qajar. This deadly disaster was widespread for many years in Kermanshah, Nahavand, Hamedan, Borujerd, and Azerbaijan and killed half of the population in the Qajar era (Sepehr, 2002, p. 475).

During the reign of Fath Ali Shah Qajar, in 1830 A.H., plague and Cholera spread in the cities of the Ottoman Empire and, from there began to infect Iran. Hamedan was among the first cities that were exposed to these diseases due to the large number of pilgrims returning from Iraq and the crowds they made. This disease had been continuing for about four years and caused a population decrease in cities and villages (Humbly, Melville, and Avery, 2010, p. 398).

Layard, a British traveller, and archaeologist, in his early adventures in Iran, said that during the reign of Fath Ali Shah Qajar in 1831, the disaster of the Plague spread to most parts of Iran and Rome. In Kermanshah and Hamadan, the number of casualties was countless. About two to three hundred thousand lost their lives. This disaster spread in most regions of Iran and killed innumerable people (Layard, 2017, p. 69).

In 1875 AD, a severe plague spread from Mesopotamia to Iran. It spread to almost all parts of Iran, even the desert areas. This epidemic was one of the most severe plagues in Iran (Tajbakhsh, 1993, p. 585). In the seventh issue in 1884, Akhtar newspaper reported the research of two doctors who were sent to investigate a sudden disease spread in Hamedan. The results of their investigations performed in two villages of the Hamedan region were reported. At the end of 1301 A.H., a disease appeared around Hamedan. As the mentioned commission reported, the disease appeared in the villages of Ojaq and Naserabad, located between Qaraghan-Kuh and Bahai-Kuh. According to the investigation of the Health Commission, one of the residents of Ojaq village found a handkerchief near the village and tied it around his head. He and all his family members died. After that event, thirty-two people died in Ojaq village within nine days, and seventy-four people died in Naserabad within twenty-seven days. The symptoms showed that the disease in these two villages was the Plague (Akhtar Newspaper, 1885, p. 67) (Table 3 and Figure 7).



Table 3: The state of the spread of the Plague in Hamedan in the Qajar era

year	Reign period	Reported disease	Duration	Daily estimation	Estimating human casualties during disease outbreak
1829	<i>Fath Ali Shah</i>	The Plague began to spread in the west of Iran, Hamedan, Kermanshah, and Sanandaj	One year	Half of the population	15000
1830	<i>Fath Ali Shah</i>	One year of Plague spread all over Iran, Hamedan and Kermanshah	One year	Thousands of people	3000
1831	<i>Fath Ali Shah</i>	Spread of Plague	Two years	Thousands of people	25000
1974	<i>Naseroddin Shah</i>	Spread of the Plague in all regions of Iran and Hamedan	One year	--	1000
1883	<i>Naseroddin Shah</i>	Spread of Plague	One year	Four people every day	10000

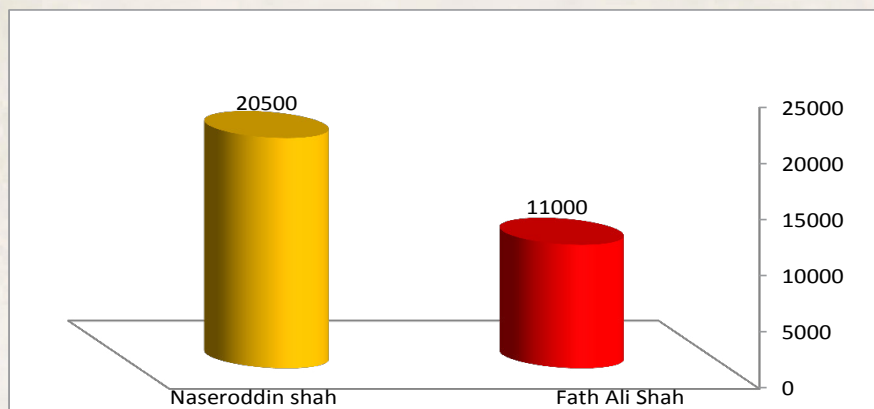


Figure 7. The number of human casualties caused by the Plague in Hamedan during Qajar

Content Analysis

The above statistics and graphs show that the spread of infectious diseases during the Qajar era in Hamedan was prevalent. These diseases naturally subsided after causing maximum casualties in the region and then spread again later. According to the time and era of the Qajar kingdom, it can be acknowledged that the highest prevalence of infectious diseases was during the reigns of Fath Ali Shah, Naser al-Din Shah, and Ahmad Shah. One of the reasons for the efforts made to improve the health status of the country and modern medicine during the era of Naser al-Din Shah was the widespread and high casualties of diseases that afflicted the kings themselves and the Qajar courtiers, as well. In addition, the statistics and data show that the infectious diseases in the Hamedan region have had a significant fluctuating course in terms of time. When the quarantine regulations were observed, the casualties were also fewer. Plague and cholera also caused a lot of human casualties during the Qajar period in general and more during the period of Fath Ali Shah. Therefore, it can be concluded that while cholera was most responsible for reducing the population of the Hamadan region during the Qajar period, influenza and plague also played a significant role. (Table 4 and Figure 8).



Table 4: The total sum of the number of human casualties caused by infectious disease in Hamedan of Qajar era

Row	Name of disease	Number of dead
1	Cholera	5000
2	plague	36000
3	Influenza	6600

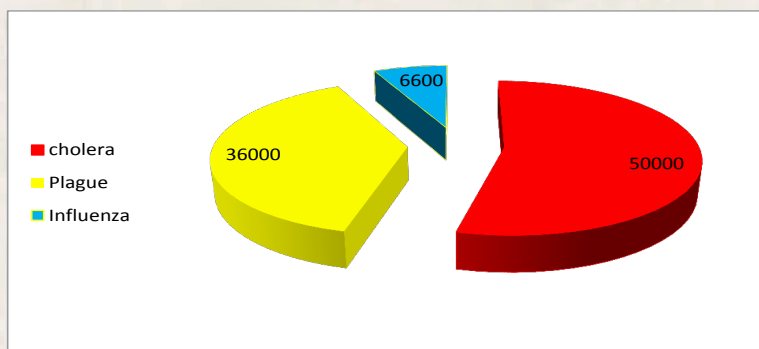


Figure 8. Comparison of human casualties of three diseases, Cholera, Plague, and Influenza, in Qajar era Hamedan

Conclusion

The most compelling reason for sudden deaths in Iran was frequent outbreaks of infectious diseases. General economic backwardness, the lack of the most basic health facilities, especially the lack of any program for public health, caused infectious diseases to cause maximum casualties as soon as they spread in the infected areas. The economic recession caused by poverty and famine provided the ground for the spread of diseases. The health and hygiene condition of Hamedan in the Qajar era resulted from the cultural, economic, and social conditions and the weak performance of the rulers of this city. Due to the government’s lack of commitment and failure to address the health, social, and cultural situation in the Hamadan region, with its inappropriate environments, it was susceptible to contagious diseases like the Plague and Cholera. In the meantime, the rulers fleeing to the nearby villages at the time of diseases and leaving the people alone in the disease-stricken region were effective in the increase of human casualties. Among the infectious diseases, Cholera was in the first rank in posing human casualties in the Hamadan region and then entering other parts of the country, mostly from the west and spreading rapidly. The frequency of the disease and the number of casualties in the Qajar era were at their highest level during the period of Fath Ali Shah, Naseruddin Shah, and Muhammad Shah Qajar, respectively. However, despite the higher frequency of infectious diseases during Naseroddin Shah’s time, human casualties were on the decrease because of the improvement in health conditions. After Cholera, climate and weather conditions caused plague diseases, especially Influenza, which increased to the highest level of casualties in Ahmad Shah Qajar’s reign. The climatic conditions and the cold weather in Hamedan were the main reasons for the spread of Influenza. In addition, the cold weather was the main reason for changing the reservoir water of bathhouses in longer intervals in Hamedan and other cold areas since heating the water in the cold seasons was not economically



affordable. On the other hand, the weather conditions hindered helping those affected by the disease and famine. The roads were closed since Hamedan had a cold and icy winter during that season. Moreover, if the neighboring states were to provide aid for them, the closure of the roads was a severe obstacle, leading to a massive loss of human population. Similarly, the Plague caused a lot of human casualties during the Qajar era and especially during the reign of Fath Ali Shah, but it was less severe and less frequent than Cholera and Influenza. Therefore, it can be concluded that the three diseases of Cholera, Influenza, and Plague had a significant role in reducing the population of the Hamedan region during the Qajar era.

Conflict of Interest

None.

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