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# Infectious Disease Epidemics in Kazakhstan in the 1900–1930s and Their Impact on Healthcare Development

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## ABSTRACT

Before the COVID-19 pandemic, an optimistic belief prevailed worldwide that the protracted struggle against infectious diseases had ended. However, COVID-19 later emerged as a truly global phenomenon with a considerably higher fatality rate than that of other infectious diseases. To date, no country has been unaffected by this virus. COVID-19 has tested the resilience of healthcare systems and the deployment of response forces globally. This circumstance underscores the relevance of assessing past experiences in combating infectious diseases and eradicating certain dangerous infections. This article attempts to uncover the challenges encountered in implementing imperial and Soviet government policies related to epidemic control in Kazakhstan. It analyses the major epidemics in Kazakhstan, measures taken against them, and initial steps toward vaccinating the population. In pre-revolutionary Kazakhstan, infectious disease control was episodic owing to limited resources and insufficient well-trained and experienced doctors, paramedics, and nurses. Despite the post-civil war complexities of rebuilding the economy, the Soviet Union has prioritised the prevention of epidemics. Infectious diseases, such as typhus, typhoid fever, cholera, smallpox, and dysentery that spread via the digestive tract have presented the greatest challenge. The government has funded vaccination programs and adopted sanitation measures to prevent the transmission of these diseases.

*Keywords*: Epidemic, healthcare system, incidence rate, infectious diseases, outbreaks, preventive measures, vaccination

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## INTRODUCTION

In the second half of the 20th century, the world witnessed notable successes in controlling epidemics and increasing average life expectancy. The outbreak of the novel coronavirus or COVID-19 pandemic has claimed more than 3 million lives worldwide and revealed the importance of examining long-term experiences in overcoming global epidemics.

The historiography of epidemics covers a wide range of scientific literature on various aspects regarding the emergence, spread, and consequences of previous epidemics. Hays' (2005) *Epidemics and Pandemics: Their Impacts on Human History* analyses the general history of epidemics in Europe, America, Africa, and Asia from ancient times to the present day. Each essay in the book combines biological and social information regarding major epidemics that have significantly impacted the course of world history. Loomis' book (2018) comprehensively overviews the ten most influential epidemics in human history. The author believes that epidemic diseases constitute the main driving force in shaping the world and reveals their important role in decision-making regarding wars, overthrowing empires, making major technological leaps, and even altering the human genome. Snowden (2019) conducted a large-scale study examining the relationship between epidemic diseases and social changes. In his multidisciplinary and comparative study of the medical and social histories of major epidemics, the author revealed the impact of epidemics on the development of medicine and public health and demonstrated their influence on the history of art, religion, and social thought. Many studies have focused on the economic and social consequences of COVID-19 transmission. For example, Kalkın et al. (2021) investigated the problem of emergent xenophobia and strategies for combating this negative consequence of the pandemic.

The American researcher Davis (2018) studied the history of cholera in Russia in 1817–1917. He evaluated the ecological approach of pre-revolutionary Russian doctors toward dealing with infectious diseases, their strategies for addressing cholera epidemics, and the formation of the Soviet public health system based on extensive archival materials. However, the spatial framework underlying Davis' study did not cover the territory of Kazakhstan.

Vasiliev and Segal (1960) describe the history of epidemics in Russia: the plague of 1660–1664, eight cholera epidemics in the 19th century, the Spanish flu of 1918–1919, the spread of typhus and their consequences. Lotova and Idelchik (1967) and Baroyan (1968) explored the causes of infectious disease transmission in the Union of Soviet Socialist Republics (USSR) and methods of combating epidemics. These two books illuminate the history of the spread of infectious diseases in the territory of Russia.

However, Kazakhstan's history of the struggle against infectious diseases has been understudied. Information regarding the spread of infectious diseases and the state of the epidemic situation in the territory of Kazakhstan can only be found in the

works devoted to the development history of the healthcare system (Chesnokov, 1946; Samarin, 1958). In Chesnokov's book (1945), only one chapter pertains to the period under study, where the author provides comparative statistics on the development of the healthcare system in Kazakhstan during the colonial and Soviet periods, with a brief description of the fight against epidemics.

In Samarin's book (1958), some information about the struggle against the spread of infectious diseases in Kazakhstan during the colonial period can be found, but the statistics provided by the author mainly concern settlers—Russian peasants who arrived from Russia to Kazakhstan. In the two chapters dedicated to the history of the formation of the healthcare system, one can find some information about the fight against epidemics in Kazakhstan during the Soviet period. However, in these chapters, the author focuses primarily on the decrees and decisions of Soviet authorities and the Communist Party.

A book by Birtanov and Birtanov (1998) delves into the historical development of medicine in Kazakhstan, offering a concise overview of early healing methods and the emergence of the first hospitals during the studied period. Nevertheless, the book does not have a history of specific cases of spreading infectious diseases in Kazakhstan. The history of establishing the sanitary-epidemiological service in Kazakhstan in the 1920s–1930s is very briefly outlined, as is the history of mobile medical teams that fought against infectious diseases in remote areas of Kazakhstan and introduced sanitary culture among the population. Thus, this book is only a brief overview of the development of medicine in Kazakhstan. Furthermore, a book authored by Kamaliev et al. (2004) provides an in-depth exploration of the evolution of traditional medicine and public health in Kazakhstan throughout antiquity, the Middle Ages, as well as the colonial and Soviet eras. In the book, some information about establishing the system to combat the spread of infectious diseases and the work of Kazakh doctors can be found. However, there is a lack of information about specific cases of epidemics in Kazakhstan.

Junisbayev (2019) investigated the establishment of the Soviet healthcare system by analysing archival documents. It also examined the endeavours of the People's Commissariat of Health of the Turkestan Republic in creating a medical network within the province during 1917–1919, when the south-eastern region of Kazakhstan was part of the Turkestan Republic. Furthermore, in their article, Shildebay et al. (2021) thoroughly examined the history of the Regional Sanitary and Bacteriological Institute. This institute played a pivotal role in shaping the healthcare system in Kazakhstan and the activities of the scientists and physicians associated with it in combating infectious diseases and epidemics. As evident from the historiographical overview, books on this topic primarily consist of brief surveys of the establishment of medical institutions in Kazakhstan, while articles delve into

the history of the creation and activities of individual medical institutions.

Consequently, existing literature lacks a comprehensive history of epidemics in Kazakhstan and systematic efforts to combat infectious diseases, resulting in the eradication of the most dangerous infectious diseases in the country. This article attempts a new interpretation of the history of epidemic control in Kazakhstan, the institutionalisation of the healthcare system, and the evolution of state health protection policies from 1900 to 1930. These years encompass the final period of the colonial system and the emergence of the Soviet medical service in Kazakhstan.

The history of epidemic control in Kazakhstan encompasses vast spatial and temporal scales. Therefore, we have limited the chronological scope of the study to the 1900–1930s. This period was the most difficult phase for Kazakhstan, a former outskirt of tsarist Russia with a backward healthcare system. In addition, this territory suffered the hardships of revolutionary events and civil war and experienced forced collectivisation and famine.

## MATERIALS AND METHODS

This study is based on information acquired from the Central State Archive of Scientific and Technical Documentation of the Republic of Kazakhstan (CSASTDRK), published reports of state institutions on the statistics of major infectious disease transmission in pre-revolutionary and Soviet Kazakhstan, measures for preventing epidemics, and the history of the formation of state structures targeted at preventing infectious diseases.

In exploring this study's topic, we employed a world-system approach, enabling us to perceive the study subject as an integral component of an intricately organised system. The functioning and development of this system encompassed essential components, treating them as separate specific events, historical situations, and global processes. In our case, infectious disease outbreaks in Kazakhstan served as separate specific events. At the same time, the historical situation entailed the struggle against infectious disease transmission and the evolution of the healthcare system during the colonial and Soviet periods. At the global level, epidemics are recurring worldwide, spanning the Russian Empire and USSR. These real events, phenomena, and processes were interconnected and interdependent, featuring cause-and-effect relationships. Identifying these internal connections facilitated a comprehensive understanding and assessment of the research object.

Our research relied on a narrative method, commonly employed in studying issues about 'real life'. This method permitted us to reconstruct the circumstances surrounding the emergence and proliferation of epidemics in Kazakhstan, as well as the methods employed to combat them. To scrutinise specific historical material, we utilised a historical–genetic method to examine the genesis (origin and developmental stages) of specific historical phenomena and analyse the causality of changes. The primary

objective of the historical–genetic method is to elucidate factual events, pinpoint the reasons for their occurrence, trace the features of their development, and discern their consequences, effectively delving into causality. In this study, the historical–genetic method allowed us to methodically uncover the essence and dynamics of the epidemic situation in Kazakhstan during the imperial and Soviet eras as well as identify the role of healthcare system institutionalisation in the battle against infectious disease transmission in Kazakhstan.

To analyse the evolution of epidemic control methods, we employed a historical–comparative approach, which enabled the identification and comparison of different developmental stages within the research object. This approach allowed us to track changes and determine the developmental patterns. In our study, this method proved invaluable in identifying the various periods of epidemic outbreaks and evaluating the effectiveness of efforts to combat infectious diseases. Furthermore, we also employed this method in the analysis of statistical data.

## RESULTS AND DISCUSSION

### Kazakhstan's Healthcare Background

At the beginning of the 20$^{th}$ century, all developed countries had established national health systems that helped them efficiently eradicate dangerous infectious diseases, such as the plague, cholera, smallpox, and scarlet fever, owing to the discovery of various vaccines. However, all these corrective measures were predominantly undertaken in the centres, while the epidemic situation in colonial countries remained unabated.

During the colonial period, only 98 hospitals and 96 outpatient clinical institutions were present in Kazakhstan, employing 196 doctors (Chesnokov, 1946). The nomadic population did not have access to specialised medical care, thus resulting in the spread of various infectious diseases.

The most common disease was malaria, the prevalence of which in Kazakhstan exceeded that in the entire Central Asian region. Specifically, in 1911–1913, the malaria incidence rate per 10,000 population was 208 in Central Asia and 216 in Kazakhstan (Koryakin, 1930). Western Kazakhstan exhibited the highest malaria incidence rates (Koryakin, 1930). In 1914, the region's malaria mortality rate reached 12% of the total cases (Chesnokov, 1946). The vast Caspian lowland represents the territory of Western Kazakhstan. This territory is rich in rivers, swamps, lakes, and flood meadows. Approximately 650,000 hectares of land are occupied by swamps, and the average relative humidity is 45%–70%. The combination of such conditions is likely to have influenced the high incidence of malaria in the region. In addition, the lack of medical care also contributed to the widespread transmission of malaria across the indigenous population. Of the entire population, 51.3% lived in nomadic areas, 22.3% in semi-nomadic areas, and 26% in settled areas (Koryakin, 1936). One medical station in Western Kazakhstan served an average of 49,800 people; one doctor accounted for an average of 2,450 urban dwellers and 68,450 rural residents (Koryakin, 1930). No medical

care covered Kazakh nomads since small medical institutions were in cities. The Akmola region, which covered 479,200 square versts (a verst is a Russian measure of length equal to 1.06 km), only had nine medical institutions with 109 beds (Samarin, 1958).

At the beginning of the 20th century, infectious diseases, such as smallpox, measles, diphtheria, and whooping cough, were prevalent as few effective measures of controlling them were available, and the mortality rate was high. In 1905–1906, a plague outbreak was registered in the Naryn region, where 659 people fell ill, and 621 subsequently died (Sagiev, 2020). The Anti-Plague Commission, established in 1897, was responsible for organising the fight against the spread of the plague, while the Imperial Institute of Experimental Medicine studied the challenges associated with the spread of the plague in the Russian Empire. The institute examined the scientific materials collected by previous expeditions and performed detailed research on the incessant plague outbreaks in the Astrakhan province from 1899 to 1913 (1,758 cases with 1,581 deaths) (Blokhina, 2012). Laboratory staff organised expeditions, identified the natural foci of the plague and identified the carriers and vectors of the plague. However, despite their active research and anti-epidemic work, they could not halt the spread of this infectious disease across this territory of the Russian Empire. Plague outbreaks in the Kazakhstani population were also noted in 1907, 1910–1914, 1918, 1924, and 1928.

In 1910, in the Akmola region, the mortality rates from smallpox, diphtheria, typhoid fever, typhus, dysentery, and scarlet fever were 18.6%, 19.3%, 10%, 10.4%., 12.5%, and 11.4%, respectively. In 1913, measles, diphtheria, and scarlet fever were registered in all areas in the Semirechensk region, and in some places, these diseases assumed the nature of an epidemic (Samarin, 1958). During the First World War, typhus epidemics occurred in prisoner-of-war camps in Russia and occasionally spread to the surrounding territories. Specifically, in 1915, a typhus epidemic broke out in Western Kazakhstan, with 1,129 cases of infection and 115 deaths (Patterson, 1993).

During the colonial period, only a few dozen healthcare institutions existed across the vast territory of Kazakhstan, unable to provide systematic efforts against the spread of infectious diseases. Moreover, these healthcare facilities were mainly located in large settlements inhabited by representatives of colonial authorities and wealthy Russian settlers. Naturally, in such a situation, epidemics frequently occur among the local population in Kazakhstan, leading to high mortality from infectious diseases.

## Institutionalisation of the Healthcare System during Epidemics in Kazakhstan in 1900–1930

During the 1917 Revolution and 1918–1920 Civil War, during the Spanish flu epidemic, various typhus outbreaks, and famine, organising systematic medical care was impossible. The People's Commissariat of Health, established in 1920, formulated plans for the organisation of medical care

and prevention of epidemics; however, these plans were not implemented owing to the circumstances associated with post-war devastation and chaos. In the 1920s, infectious disease transmission in the republic territory was considerably high. Comparative analyses of the 1921, 1922, and 1923 data did not reveal any improvement in the dynamics of the population's morbidity rate in Kazakhstan. In 1923, 285,857 patients contracted infectious diseases in Kazakhstan, among whom 82,268 were in the provinces and 203,589 in the counties (Solov'ev, 1924). In 1920, among the registered patients in Kazakhstan, 6,186 had scurvy, 2,575 smallpox, 1,589 scarlet fever, 1,887 measles, 2,138 whooping cough, 16,591 typhoid fever, 31,435 typhus, 28,982 recurrent typhus, 6,271 typhus of unknown origin, 11,447 dysentery, 14 cholera, 225 anthrax, and 35,572 malaria (People's Commissariat of Health of the KASSR, 1921).

In 1899–1923, the sixth cholera pandemic reportedly occurred worldwide, and the outbreak of this infectious disease originated in India because of the consumption of contaminated food and water. In 1921, the number of people infected with cholera in Russia reached 207,000, of which 44.8% died (Rosenberg, 1962). By the end of June 1921, the cholera epidemic from Samara had spread to Kazakhstan. By the end of August, 13,789 people had fallen ill, and 5,706 people had died (People's Commissariat of Health of the KASSR, 1921). In 1922, 4,733 deaths occurred in 8,158 patients who had contracted cholera. Most of those infected were rural residents (6,394 people), and 59% of them died. During this period, cholera was among the most dangerous and deadly epidemics (Report of the Council, 1922). In 1922, a major cholera epidemic occurred in the Semirechensk region, killing 2,533 people (74.6%) out of 3,395 cases (Sagiev, 2020). The spread of cholera was predominantly exacerbated by the poor state of water supply and sanitation in Kazakhstani cities. Cholera prevention required data collection on the state of the water, soil, and air, food quality control, and sewerage and water supply improvement.

After establishing the Kazakh Autonomous Soviet Socialist Republic in 1920, the People's Commissariat of Health was founded, and its operational structure began to take shape. In December 1921, the Central Emergency Sanitary Commission was established under the People's Commissariat of Health of the USSR to systematically combat infectious diseases and epidemics; moreover, it was responsible for mobilising all possible means of controlling epidemics. The same commission was established in Kazakhstan, including the People's Commissar of Health of the Republic, the commissioner of the All-Union Emergency Commission, and the head of the Military Sanitary Department of the People's Commissariat of Health. At the provincial executive committees, emergency sanitary commissions were also constituted to monitor and formulate measures to combat the epidemic (these commissions were referred to as "sanitarnaya troika"

in documents and correspondence related to the challenge of eliminating epidemic sources).

The spread of malaria, typhoid fever, cholera, and other infectious diseases was not only associated with the poor social conditions of the population but also with unfavourable environmental conditions and the inaccessibility of clean drinking water. The population's nutritional intake was the next significant factor in infectious disease transmission. In the empire, during the First World War and Civil War, the nutritional intake of the population gradually decreased because of the partial crop failure of 1920 and the complete crop failure of a vast part of the republic in 1921. These events caused a terrible disaster: famine in Kazakhstan, where the hungry population had to make use of various kinds of surrogates, some of which were certainly harmful, severely affecting people's health. The most popular surrogates were straw, quinoa seeds, a mixture of potato peel and beetroot, wild cherries, liquorice root, flour made from fresh bones, rubber, and sunflowers. None of the used surrogates were nutritious. Systematic malnutrition and complete starvation attracted several diseases owing to exhaustion, reduced resistance, the creation of favourable conditions for infectious diseases, and increased mortality in the population.

From December 1921 to February 1922, 46,265 typhoid cases were registered in Kazakhstan. However, in Kazakhstan, the situation was significantly worse because of the mass famine of 1921–1922. The People's Commissariat of Health outlined a plan to organise several medical and food detachments that were supposed to provide sanitary and food assistance to hungry and sick people; however, lacking resources rendered it impossible to implement these plans.

At the beginning of June 1923, the third All-Kyrgyz Congress of Health Departments was convened to discuss key issues, such as the People's Commissar of Health report and the state of medical and sanitary affairs, among others. In addition, Congress discussed potential measures for combating the spread of infectious diseases in the republic's territory, including the plague in Bukeevskaya and Ural provinces. The People's Commissar of Health, M. S. Shamov, noted in his report the deplorable state of healthcare in Kazakhstan and the complexity of the tasks facing the People's Commissariat. In 1923, 122 people contracted the plague in Bukeevskaya and Ural provinces, and 119 of them died, including 13 families comprising 67 people. Several detachments consisting of nine doctors (including three bacteriologists), nine paramedics, and 22 orderlies worked in the foci of the epidemic, taking quarantine measures (People's Commissar of Health of the KASSR, 1923). However, the remoteness of the homes affected by the disease, late notification to medical institutions regarding the outbreak, lack of transport, and extremely slow movement of medical personnel detachments rendered it difficult to eliminate the foci of the epidemic.

In 1923, malaria was the most common disease in Kazakhstan, and the number of cases was 73.9% of all infected patients; 238 and 390 patients with malaria per 1,000 people were identified in the provincial cities of the republic and counties, respectively, with the average in the USSR being 51.9 (Solov'ev, 1924). On 12 May 1924, the Resolution of the Council of People's Commissars of the Russian Soviet Federated Socialist Republic (RSFSR) "On measures to combat malaria" was adopted. Local authorities were to "provide all possible assistance to the organisation of the fight against malaria on the ground, involving interested departments, professional organisations, and the wide public in this work; in particular: a) to carry out urgent and feasible measures to improve the soil and to drain swamps, ponds, and other reservoirs that contribute to the development of malaria..." (Actions and Orders of the Government of the RSFSR, 1924). In subsequent years, the incidence of malaria rose in the population.

In terms of combating epidemics, an accurate bacteriological diagnosis of infectious diseases was imperative; nonetheless, owing to the lack of sanitary and bacteriological laboratories in Kazakhstan, the entire conflict against epidemics was limited to enforcing quarantine measures and eliminating disease foci. In addition, extremely few studies investigated the nature of infectious diseases or identified and determined the causes of foci spread. *Bacilli* carriers are known to play a role in spreading typhoid fever and diphtheria; therefore, sanitary and bacteriological laboratories had to conduct extensive survey work to detect them. In the event of the plague, malaria, and other epidemic diseases, animals, insects, water, and food potentially serve as sources of infection. Sanitary and bacteriological laboratories can develop a method for successfully combating the epidemic if they identify the source of infection. In 1922, the People's Commissariat of Health of the KazASSR created a Regional Chemical and Bacteriological Laboratory in Orenburg, which was supposed to deal with issues regarding sanitation and epidemiology in the republic. However, the limited staff and lack of certain necessary specialists made the laboratory work difficult. Based on this laboratory, the KAZTSIK Regional Sanitary and Bacteriological Institute was established in July. By the beginning of 1926, the Institute had established bacteriological, chemical, clinical diagnostic, serum, and serological departments, as well as malaria and Pasteur stations. Departments dealing with vaccination problems were also instituted. The Republican People's Commissariat of Health funded the Sanitary-Bacteriological Institute. It had the right to receive monetary grants from the Red Cross and other institutions.

In 1926–1928, preventive work continued: the staff of the entomological office examined the presence of insects causing malaria and other infectious diseases in 20 370 different reservoirs as well as 108 residential and non-residential premises of the city of Almaty and its environs (Kazakh Regional Sanitary and

Bacteriological Institute, 1926). In 1929–1930, the People's Commissariat of Health of KazASSR organised seven expeditions to the construction areas of the Turksib railway and other parts of Kazakhstan. Or-Karatal, Balkhash, Resettlement, Alma-Ata aulno-rural, Balneological, and other expeditions conducted sanitary–hygienic and epidemiological studies of resettlement areas and areas reserved for state farms specialising in rice cultivation. They also examined the territories of Balkhash, Kopal-Arasan, and Almaty mineral springs. The destruction of pathogenic insects and pest control also contributed to the reduction of morbidity. The anti-plague expedition examined rodents in the areas bordering China in the Almaty and Semipalatinsk districts (Kazakh Regional Sanitary and Bacteriological Institute,1929).

Bacteriological and Pasteur stations were engaged in the development of preventive vaccines and therapeutic serums: the republic was fully provided with smallpox detritus; in 1926, 20, 12, and 5 L of divicine, staphylococcal vaccine, and streptococcal vaccine were manufactured, respectively. In most cases, patients only underwent diagnostic verification without retesting in the post-treatment period because of the lack of doctors; however, the preventive work conducted and assistance provided in treating patients yielded certain positive results. Therefore, in 1926, 175 patients passed through the Pasteur station without fatalities (Shtiben, 1927). Mass vaccination commenced in 1931; however, comprehensive vaccination was only administered to the urban population in 1933, while those in rural areas did not undergo vaccination (People's Commissar of Health of the KASSR, 1929).

Doctors also received alarming signals from workers on constructing the Turkestan-Siberian Railway (TURKSIB). In one section of the construction line alone, 115 typhoid cases were registered; 35 people received treatment at Ili Hospital and 53 in Ainabulak, while the rest of the patients remained in their barracks, tents, and yurts. In Iliysk, patients were in a shed in the yard of the outpatient clinic in clothes without bedding, food, and care; patients with different diagnoses were grouped. A common case was classified when a worker with malaria easily contracted typhoid fever in the hospital (Sheigal, 1929). After that, the authorities decided to open Pasteur vaccination centres in Taldykurgan and Sarqand to vaccinate all workers in the northern and southern parts of Turksib (Kazakh Regional Sanitary and Bacteriological Institute, 1929).

In December 1930, news emerged regarding the spread of typhus in the city of Almaty. An emergency meeting of the Emergency Commission for Combating Epidemics discussed this problem. It resolved to allocate rooms to isolate patients, promptly connect hospitals to the water supply network, open additional laundries in hospitals, accelerate bath construction in the city and oblige the leadership of Turksib to allocate rooms for passengers at train stations (Extraordinary Commission under the Council of People's Commissars of the

Kazakh ASSR, 1930). The local authorities also adopted preventive measures: homeowners and tenants in charge of dormitories and public premises in cities were obliged to rid cesspools, garbage pits, and yards of garbage; clean streets near their estates; and improve the sanitary conditions of dormitories and inns (Extraordinary Commission under the Council of People's Commissars of the Kazakh ASSR, 1930). Rural-to-urban migration and increased industrialisation led to overpopulation in poor housing with no public water supply and waste disposal system. These conditions led to repeated outbreaks of cholera, dysentery, tuberculosis, typhoid, influenza, and malaria. During this period, the rapid increase in the incidence of infectious diseases in the Kazakhstani population did not only emanate from the weakness of preventive measures but also from the mass famine that swept the entire territory of the republic in 1932–1933.

The establishment of a permanent healthcare system in Kazakhstan, including state sanitary inspection, sanitary-epidemiological institutions, bacteriological laboratories, research institutes, and centres, along with the introduction of systematic monitoring of the sanitary condition of settlements, facilitated the elimination of dangerous infectious diseases such as cholera, plague, and smallpox.

## CONCLUSION

The spread of infectious diseases and the struggle against them has driven many countries to develop elaborate global health systems comprising various networks of organisations. Owing to the lack of such a healthcare system in pre-revolutionary Kazakhstan, infectious disease control was episodic because the means to combat epidemic diseases were considerably limited, and well-trained and experienced doctors, paramedics, and nurses were insufficient.

The Soviet Union prioritised the prevention of epidemics despite the complexities associated with rebuilding the economy after the civil war. Central, republican, and local health authorities made some progress in implementing disease prevention activities, including examining infection sources and the organisation of patient treatment. Infectious diseases, such as typhus, typhoid fever, cholera, smallpox, dysentery, and other diseases that spread via the digestive tract were a matter of special concern. Their incidence rates were not only associated with the poor living conditions of the population but also with poor personal and environmental hygiene, as well as a lack of inaccessibility to clean drinking water. The government-funded vaccination programs and adopted sanitation measures to prevent the spread of these diseases, resulting in the exhaustive provision of smallpox detritus to the republic. Research institutes played significant roles in addressing epidemics by identifying the natural foci, sources, and mechanisms of transmission of infections. Vaccination of the population against dangerous infectious diseases was organised. Vaccines not only protect the health of an immunised person but also that of society.

An adequately high vaccination rate tends to halt the transmission of infectious diseases in the community, implying that even those not vaccinated receive protection. During the formation of the healthcare system in the Soviet era, several critical elements were set in motion, which included implementing a system of sanitary control, protection of maternal and child health, organised and systematic battle against acute infectious diseases, establishment of medical personnel training, the emergence of a network of pharmacies, and application of efforts to improve drinking water quality. The state played a pivotal role in effectively responding to infectious disease outbreaks. During this period, rural medical districts experienced significant growth. They were equipped with laboratories and medical equipment and staffed with doctors, nurses, and sanitation workers. In the 1920s–1930s, extensive sanitary and health measures were implemented, resulting in the elimination of cholera, plague, and smallpox, as well as a significant reduction in malaria and tuberculosis morbidity.

In the contemporary world, factors such as global warming, changes in natural and climatic conditions, and the intensification of migration have led to the resurgence of infectious diseases eradicated in the previous century. This situation is especially pertinent for post-Soviet countries, where the once-established state systems for safeguarding the population against infectious diseases are being scaled back. The experience gained from combating infectious diseases in Kazakhstan underscores the importance of public health system competencies and the efficient organisation of large-scale emergency responses to prevent epidemics and mitigate their adverse effects.

## Significance of the Study for Theory and Practice

In theoretical terms, our research contributes to the application of a world-system approach to the study of the history of Kazakhstan. By examining the history of the spread of infectious diseases in Kazakhstan within the context of global historical processes, we demonstrate the potential of applying a world-system perspective to the study of local history. By comparing the history of the spread of infectious diseases in Kazakhstan with global trends in the emergence of epidemics worldwide and efforts to combat them, we identify interconnections and mutual influences in the development of world history.

The practical significance of our research lies in the possibilities of applying certain methods to combat the spread of infectious diseases in modern Kazakhstan. COVID-19 has shown that the people of the world are still at risk due to the spread of new infectious diseases. The methods of combating the spread of infectious diseases, as well as the preventive measures undertaken by government agencies in Soviet Kazakhstan, demonstrate the effectiveness of epidemic control at the state level. The history of combating epidemics in Kazakhstan underscores the necessity of establishing a state healthcare system.

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