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# Infectious diseases and the causes of their spread in the Akmola region of Kazakh republic (1954–1965)

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## ABSTRACT

**Introduction:** During the period from 1954 to 1965, the Soviet government initiated the development of virgin and fallow lands, intensifying migration flows into the Akmola region (renamed Tselinograd in 1961) and contributing to a significant increase in infectious diseases.

**Objectives:** The purpose of this article is to investigate the nature and causes of the spread of infectious diseases in the Akmola region during the development of virgin and fallow lands.

**Methods:** The article includes a brief historiographical overview of historical and medical works related to the topic and outlines the scientific methods and sources used in the study. It also analyzes the work of administrative health authorities and medical personnel in the virgin land areas of the Akmola region during the period under review. The analysis assesses the level of medical care provided to the population, including disease prevention and treatment, vaccination campaigns, quarantine and disinfection measures, and medical supervision in a vast area affected by infectious outbreaks. Special attention is given to the issue of medical staff shortages.

**Results:** In studying the state of healthcare and the factors contributing to the spread of infectious diseases in Akmola, certain trends and problems typical of the entire Tselinny Krai were identified. The study finds that during the development of virgin and fallow lands in the Akmola region, infectious diseases—primarily tuberculosis, diphtheria, polio, and others—were widespread.

**Conclusions:** The authors conclude that the persistent presence of these diseases in the region's medical practice resulted from a complex set of contributing factors.

**Key words:** Akmola region, infectious diseases, clearing of virgin lands, health

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## Introduction

Infectious diseases, caused by various pathogenic microorganisms such as bacteria, viruses, and fungi, continue to affect the global community. Their complete eradication would represent a revolutionary achievement in the field of global public health.

In the long-term Soviet history of Northern Kazakhstan—which included the territories of the Akmola, Kostanay, North Kazakhstan, Pavlodar, and Kokchetav regions—numerous epidemics of diphtheria, plague, smallpox, and other infectious diseases caused significant harm to the population's health. This article focuses on the history of efforts to combat infectious diseases in the Akmola region during the period from 1954 to 1965. This chronological framework was chosen for the following reasons: 1954 marked the launch of the Virgin and Fallow Lands Campaign by the Soviet government in Northern Kazakhstan, while 1965 marked the completion of major measures aimed at increasing grain production in the region. The geographical focus of the study is the Akmola region, with its administrative center in the city of Akmolinsk (renamed Tselinograd in 1961). This region not only became the hub of the Virgin Lands Campaign in the Kazakh Soviet Socialist Republic (hereinafter—Kazakh SSR), but also developed into a key transport corridor within Kazakhstan, as well as the administrative and cultural center of the *Tselinny Krai* (since December 1960).

Unlike other regions of the republic, the Akmola region developed at an exceptionally rapid pace. Before the Khrushchev decade, Northern Kazakhstan produced approximately 3-5 million tons of grain per year. However, by the mid-1950s, yields had risen to 16-18 million tons. The development of the virgin lands of northern Kazakhstan transformed it into the main grain-producing region of the Soviet Union (1). During the first decade of the Virgin Lands Campaign, grain production expanded more than tenfold, and hundreds of large state farms were established in the newly cultivated areas. Over the years, the region's industry, construction, and transport sectors also experienced significant growth. These processes led to a sharp increase in the population and the rapid development of the region's center—the city of Akmolinsk. For example, between 1955 and 1959, the population of the Akmola region grew from 76,000 to 101,000 people—an increase of 35% (1). By 1964, the population had reached approximately 1,029,100 people (2). Thus, over the first decade of the Virgin Lands Campaign, the region experienced a population increase of more than 1,250%.

It should be acknowledged that the rapid development of agriculture and the sharp increase in population in the region significantly outpaced the development of the healthcare system. Prior to the start of the Virgin Lands Campaign, the construction of medical facilities in the city was minimal. The city had only 5-6 hospital beds per 1,000 residents—twice as few as in other cities of the republic. There were no standard hospital buildings, no blood transfusion stations, no regional polyclinic, and no facilities for radiological treatment of cancer patients. A sanitary and epidemiological station was also completely absent. The children's hospital, for example, was located in just two apartments, which led to frequent refusals to admit seriously ill children (3).

The sharp increase in population presented several challenges for government agencies, with public health being one of the most pressing concerns. Order No. 40 of the Ministry of Health of the USSR, dated March 20, 1954, regulated the practical implementation of healthcare measures in the virgin lands. One of the key responsibilities assigned to health authorities was to organize the prevention of diseases—particularly infectious ones—among both the newly arrived settlers and the local population.

It is evident that, within their capacities, executive authorities allocated funds during this period for the establishment and maintenance of healthcare institutions. For instance, in 1955, 6.174 million rubles were allocated to the city's healthcare system (excluding funding for other departments). By 1959, this amount had increased to 10.351 million rubles (1), and by 1965, it exceeded 70 million rubles (3). These funds were used to construct a 250-bed city hospital, a 200-bed children's hospital, a 150-bed infectious diseases hospital, a 160-bed maternity hospital, a pediatric tuberculosis dispensary, a dental clinic, and other healthcare facilities (4).

Although these financial allocations were considered significant compared to other regions, they were insufficient to fully address the healthcare needs of both urban and rural populations. In our view, the trends observed in the development of healthcare in the Akmola region were also characteristic of other areas in Northern Kazakhstan, suggesting that the problem was systemic in nature.

## Materials and methods

In the course of the research, both general scientific methods—such as analysis, generalization, and synthesis—and historical methods, including the problem-chronological and comparative-historical approaches, were employed. Together, these methods enabled the systematization of available materials related to the history of infectious diseases in the Akmola region during the specified period. In addition to these, mathematical methods were also used to collect and process statistical data.

To characterize the nature of Soviet-era statistical reporting, particularly in the processing of numerical data from medical reports, the article refers to a quote by A. Blum: "Here we are faced with an obvious contradiction. On the one hand, the government needed the most accurate statistics possible; on the other, it sought to alter the information received in order to prevent an unfavorable view of the situation in the country" (5). Despite the apparent distortions in the available statistical data, they remain a valuable source of information. At the same time, to ensure an objective analysis of the quantitative data used, the method of critical verification of historical sources from various origins was applied.

The primary sources for this study were previously unexamined materials from Kazakhstani and Russian archives. The article is based on documents from the following collections held at the State Archive of the city of Astana: Fond No. 23 (Health Department of the Akmola City Administration); Fond No. 168 (Health Department of the Tselinny Regional Executive Committee, Tselinograd); Fond No. 377 (Sanitary and Epidemiological Station of the Tselinograd City Health Department); and Fond No. 185 (Executive Committee of the Tselinny Regional Council of Workers' Deputies, Tselinograd).

This study uses original archival terms from the post-Soviet system: fond, opis, and delo, reflecting standard archival practice in Kazakhstan and other countries of the former Soviet Union. The following correspondences are used as approximate English equivalents: "file" (fond), "inventory" (opis), and "case" or "dossier" (delo).

## Discussion of the problem

In both Kazakhstani and foreign historiography, the issue of infectious diseases among the population in the 1950s has often been overshadowed by broader topics in the history of healthcare. In the works of many researchers, conclusions regarding the effectiveness of government measures to improve the sanitary and epidemiological situation and combat infectious diseases in the Soviet Union—including in the Kazakh SSR—are frequently contradictory (6).

It is worth noting that numerous foreign historical and medical studies have examined, in considerable detail, the development of this issue and the main directions of research on the history of infectious diseases in the Soviet Union (7; 8; 9; 10, 11, 12). However, these works do not include specific examples or analyses of the spread of infectious diseases in Northern Kazakhstan during the Virgin Lands Campaign.

In modern Russian historiography, general aspects of the history of infectious diseases in Kazakhstan continue to be explored. While health issues in Northern Kazakhstan have occasionally been addressed (13, 14), we did not identify any dedicated studies focused on the causes and spread of infectious diseases specifically in the Akmola region. Therefore, the present study seeks to help fill this historiographical gap.

## Results

### *Infectious diseases*

The historical "distance" of more than half a century allows researchers to examine historical sources

with greater objectivity and reduced emotional involvement. As noted above, despite government efforts to support the healthcare system, the large-scale movement of people through the city had a noticeable impact on the incidence of infectious diseases, which remained consistently high throughout the 1950s and 1960s. As early as 1954–1956, the first outbreaks of infectious diseases were recorded, including dysentery, diphtheria, tuberculosis, brucellosis, and others. Diphtheria epidemics occurred in boarding schools in the Atbasar and Molotov districts, where the highest number of cases were reported among unvaccinated children. In some instances, the disease resulted in fatalities (15).

In 1958, the number of measles cases increased by 47% compared to the previous year. That same year, a total of 8,052 cases of infectious diseases were registered in the city, including: typhoid and paratyphoid fever—0.21%; dysentery, toxic and simple dyspepsia—15.9%; epidemic hepatitis—1.22%; childhood infections (measles, scarlet fever, diphtheria, whooping cough, chickenpox, rubella)—17.52%; influenza and acute respiratory infections 40.51%; brucellosis—0.07%;tularemia—0.18%;poliomyelitis—0.08%; and angina—21.1% (16).

In this context, the region saw renewed attention to the expansion of hospital bed capacity, polyclinics, and pharmacies, as well as improvements in the quality of medical and preventive services, especially for children. Efforts were also directed toward improving the sanitary conditions of settlements. Additionally, it is important to note that due to the lack of improvement in the epidemiological situation, some infectious diseases—primarily diphtheria—became endemic. In response to the ongoing challenges, the Central Committee of the CPSU and the Council of Ministers of the USSR issued a resolution in 1960 titled "On Measures to Further Improve Medical Care and Public Health Protection", specifically addressing conditions in the *Tselinny Krai* of the Kazakh SSR (17).

Few historians of medicine delve into the archives, filled with desperate letters of complaint to the Central Committee of the Party and state executive bodies. These archives contain information about physical and psycho-emotional traumas experienced in infectious diseases hospitals (18, 19, 20, 21). According to archival materials, the population of not only the region but also the entire republic expressed dissatisfaction with the quality of medical care, the performance of medical personnel, the lack of specialized doctors, inattention to patients, and the qualifications of doctors.

Systemic problems with the organization of medical care in the Akmola region can generally be considered typical for the regions of the republic, as demonstrated by data on population morbidity in 1957 compared to 1956 (see Table 1). These data serve as indicators of the effectiveness of the healthcare system ensuring public health. The republic saw a 13.3% increase in diphtheria, a twofold increase in measles, and a 29.2% increase in whooping cough. However, unlike in the Akmola, Kokchetav, Kostanay, and Pavlodar regions (Northern Kazakhstan), the incidence of scarlet fever decreased by 34.3% across the republic (22). Undoubtedly, active population migration played a key role in this decline.

It is worth noting that, by the late 1950s, the Akmola region was considered the most disadvantaged area in the entire Soviet Union in terms of brucellosis incidence (23). The veterinary and sanitary services undertook extensive efforts to combat the disease, carrying out more than 100,000 vaccinations annually, which significantly slowed its spread. By the early 1960s, only isolated cases of brucellosis were being recorded.

Certain infectious diseases common to both animals and humans—such as tuberculosis, brucellosis, echinococcosis, and other zoonoses—had a significant impact on human health and caused substantial material damage to agriculture. An analysis of reports from medical stations and district sanitary inspection stations in the Akmola region revealed that, compared to 1956, there was a sharp increase in cases of newly diagnosed brucellosis among the population (24).

A separate issue was the occurrence of infectious diseases during fieldwork. There were frequent cases where the proper storage requirements for perishable food products were not observed, leading to foodborne illnesses and disease outbreaks. For example, in the Beregovoy and Sosnyak state farms, a high incidence of typhoid fever, dysentery, and other intestinal infections was recorded over several years (3).

**Table 1.** Dynamics of incidence of childhood infections in 1956–1957.

| | diphtheria | | measles | | whooping cough | | scarlet fever | |
|---|---|---|---|---|---|---|---|---|
| **Name of regions** | **1956** | **1957** | **1956** | **1957** | **1956** | **1957** | **1956** | **1957** |
| A-Atinskaya | 244 | 197 | 4143 | 2993 | 836 | 1409 | 876 | 319 |
| Aktobinskaya | 232 | 598 | 1698 | 4287 | 1562 | 1478 | 1412 | 672 |
| East Kazakhstan | 919 | 698 | 5124 | 9323 | 3094 | 3659 | 3144 | 1690 |
| Guryevskaya | 269 | 325 | 389 | 3902 | 1968 | 829 | 982 | 308 |
| Dzhambulskaya | 365 | 319 | 3275 | 6565 | 1142 | 1889 | 947 | 450 |
| West Kazakhstan | 254 | 294 | 486 | 5722 | 946 | 635 | 1556 | 1017 |
| Karagandinskaya | 1234 | 1242 | 4736 | 9829 | 3357 | 5747 | 2835 | 1968 |
| Kyzyl-Ordinskaya | 198 | 168 | 385 | 3823 | 284 | 1281 | 311 | 87 |
| Kokchetavskaya | 448 | 728 | 1473 | 3822 | 834 | 1274 | 375 | 410 |
| Kustanayskaya | 731 | 773 | 1249 | 5661 | 1112 | 1180 | 857 | 881 |
| Pavlodarskaya | 244 | 511 | 2319 | 2675 | 927 | 2359 | 280 | 549 |
| North Kazakhstan | 552 | 646 | 2372 | 2853 | 1906 | 669 | 741 | 471 |
| Semipalatinsk | 171 | 252 | 2831 | 4084 | 777 | 1643 | 1013 | 834 |
| Taldy-Kurgan | 846 | 1122 | 2528 | 4367 | 698 | 2029 | 940 | 690 |
| South Kazakhstan | 597 | 637 | 3650 | 9125 | 2192 | 2389 | 556 | 750 |
| City Alma-Ata | 431 | 404 | 4603 | 5703 | 1808 | 1640 | 2617 | 1591 |
| Total | 7735 | 8914 | 41261 | 84734 | 23443 | 30110 | 19442 | 12687 |

During this period, the Akmola region had only just begun active construction and settlement. Due to the shortage of housing, most newly arrived migrants initially lived in settlements, dormitories, and barracks. In the early years, they lived in overcrowded and, in some cases, unsuitable conditions. Archival materials include the following account: "The families are in a dormitory with a very narrow and long corridor, and the doors on both sides are broken. A strong draft is created, which has caused a widespread outbreak of intestinal illness among children" (25).

To combat the growing morbidity rate, an order issued on April 22, 1955, by the Executive Committee of the Akmola Regional Council of Workers' Deputies called for the opening of isolation units with 80 beds for patients with dysentery and other intestinal diseases (26). Subsequently, on June 2, 1955, the Executive Committee of the City Council of Deputies approved a decision "On the opening of an isolation ward for gastrointestinal patients", which prescribed the establishment of a temporary 25-bed isolation unit due to the increasing number of cases requiring full hospitalization (26).

The issue of diphtheria incidence was particularly pressing. For example, from 1955 to 1958, diphtheria accounted for 30% of all recorded infectious diseases in the Balkashinsky district of the Akmola region (27).

A similar situation developed in other districts of the region. For example, at the Belgorod state farm and in the Kalininsky district hospital, due to the general neglect of vaccination efforts, the incidence of diphtheria among children reached 60%, with a mortality rate of 12% in 1957.

Vaccination campaigns, quarantine measures, and public health education did not achieve tangible success, and in 1960, another diphtheria outbreak occurred in the neighboring village of Bogodukhovka. The cause was the incomplete vaccination coverage among children, largely due to the absence of a proper registration system for the child population (2). As a result, deaths from this dangerous disease continued to occur over the following years. Mortality was

particularly high in the Kazan district (37.5%), the Ruzaevsky district (18.9%), and across the region as a whole (9.1%) (2). It should be noted that these deaths were not investigated, and no accountability measures were taken against those responsible for the high rates of morbidity and mortality among children.

Unfortunately, the issue of diphtheria was not resolved during the 1960s. Despite some preventive efforts, the incidence reached alarming proportions (28).

A comparable situation was observed with poliomyelitis, a disease that primarily affects children and adolescents. Since the 1950s, seasonal outbreaks of infectious diseases among organized groups of children were reported annually in the city.

On August 6, 1957, following an outbreak of polio, a temporary isolation ward was opened at the 2nd hospital for the hospitalization of patients. However, despite this measure, the disease began to spread rapidly. On August 17, in Order No. 209 issued by the head of the City Health Department (hereinafter referred to as the City Health Department), V. Alekseev noted: "The head of Nursery No. 1, Comrade V. T. Tamarova, in order to prevent the spread of infection in the city, shall transfer the nursery to a 24-hour care system for children for a 21-day quarantine period from the moment the second case of polio was identified" (24). Despite these quarantine measures, the outbreak continued to escalate, and on October 4, other nurseries in the city were also placed under round-the-clock care (24).

In Order No. 337 of the Akmola City Health Department dated October 21, 1957, the "Polio Control Center" stated: "Recently, there has been a significant increase in the incidence of polio in Akmolinsk. Medical institutions in the city are failing to ensure timely detection and hospitalization of patients. Diagnoses are delayed, indicating the unpreparedness of doctors to deal with polio (24).

An analysis of archival documents suggests that outbreaks of polio and other infectious diseases remained persistent in the city and showed no significant improvement until 1965. For instance, in 1958, schoolchildren in the city of Akmolinsk missed a total of 3,773 school days, 1,928 of which were due to infectious diseases (29).

A comparative analysis of incidence rates in 1958 and the 1960s (see Table 2) reveals both progress and ongoing challenges. Notably, there were some successes by health authorities in combating certain infections. For example, cases of typhoid fever and chronic dysentery were virtually eliminated, and the incidence of pertussis (whooping cough) declined. Infections such as toxic dyspepsia in children and smallpox were also significantly reduced.

However, the decrease in the incidence of some diseases was counterbalanced by a rise in others. There was a steady increase in cases of acute dysentery, measles, and scarlet fever, indicating that public health efforts, while partially effective, faced continuing limitations.

**Table 2.** Comparative data on infectious childhood morbidity for 1958-1960 in the city of Akmolinsk. Source: (30)

| | **Number of cases** | | | |
|---|---|---|---|---|
| **Name of the disease** | **1958** | **Per 100 children** | **1960** | **Per 100 children** |
| Typhoid fever | 50 | 3.1 | 2 | 0.1 |
| Acute dysentery | 178 | 0.9 | 290 | 1.2 |
| Toxic dyspepsia | 59 | 3.2 | 41 | 0.1 |
| Simple dyspepsia | 445 | 2.4 | 435 | 1.8 |
| Epidemic hepatitis | 130 | 0.6 | 134 | 0.5 |
| Measles | 858 | 4.2 | 1581 | 6.7 |
| Diphtheria | 117 | 0.5 | 49 | 0.2 |
| Whooping cough | 501 | 2.5 | 154 | 0.6 |
| Scarlet fever | 165 | 0.8 | 299 | 1.2 |
| Chronic dysentery | 60 | 3.2 | 2 | 0.1 |

Disinfection in the areas of infectious disease outbreaks was carried out using a combined method. This included the chamber method for detecting microsporia, trichophytia, scabies, and pediculosis, and the wet method for diseases such as hepatitis, typhoid, paratyphoid, diphtheria, and tuberculosis.

Despite the measures taken, there was no significant overall improvement in the incidence of infectious diseases. While some progress was achieved in managing specific illnesses—particularly in the context of healthcare efforts during the Virgin Lands Campaign—certain diseases showed notable declines: brucellosis by 22.2%, influenza by 36.8%, whooping cough by 17.9%, typhoid fever by 33.7%, and other intestinal diseases by 17.6%. The incidence of parasitic typhus, tularemia, polio, smallpox, cholera, plague, and several other infections was almost nonexistent. By the mid-1960s, malaria, parasitic typhus, and tularemia had been effectively eliminated (3). However, the number of cases increased in several other nosological categories. In particular, upper respiratory tract infections rose by 33%, diphtheria by 44%, chickenpox by 29%, dysentery by a factor of five, and salmonellosis and acute dysentery by 1.6 and 1.7 times, respectively (31).

It is important to note that these figures are based on official statistics. However, we believe that the statistical parameters used—such as methods for collecting control data, market surveys, and selected indicators—tended to understate the actual situation

## *Causes of infectious diseases*

### Haphazard prevention

Firstly, we believe that insufficiently effective preventive measures played a significant role in the steady increase in morbidity. One illustrative example can be found in Order No. 24 of the Akmola City Health Department, dated February 5, 1958, which emphasized the need to improve preventive work at urban medical sites. The order specifically called for accurate record-keeping of the child population aged 0 to 14 years, and for identifying the number of unvaccinated children within this age group (24). However, active population migration in the virgin land areas significantly complicated these efforts. For instance, according to the immunization plans, there were 34,351 children of vaccination age in the city of Tselinograd. Yet, according to data from the statistical office, the actual number of children in this age group was 1,182 higher. This discrepancy indicates that child registration at local polyclinics was incomplete, and the census of the child population was poorly conducted (32). Vaccination coverage was further reduced by temporary medical exemptions, even among children aged 4 to 6. This situation can largely be explained by the lack of oversight over newly arrived children by district doctors—children were not registered in a timely manner and, consequently, were not vaccinated on time.

## *Sanitary supervision*

The second most significant reason for the rise in infectious diseases was serious shortcomings in the organization of sanitary and epidemiological services (33). These included overcrowded industrial enterprises, shops, warehouses, schools, preschools, and canteens, as well as adjacent areas that remained uncleared of winter waste. Additional violations included poor sanitation practices related to cleaning, water supply, and sewage systems in populated areas.

In the 1950s, improving the sanitary conditions of the region became an overwhelming challenge for local authorities. The city was constantly experiencing a water shortage amounting to 11,300 $m^3$ (34). Addressing these issues required financial investment; however, at that time, a significant portion of state funding was directed toward agricultural development and the Virgin Lands Campaign (35). As a result, it is not surprising that the city's sewer system was constructed only in 1961. As of July 1, 1965, the length of the storm sewer network was 5.5 km, and the fecal sewer system extended to 33.6 km, including 27.6 km of street sewerage. Wastewater was discharged 7.5 km southwest of the city into Lake Taldy-Kol. In early 1966, sewage treatment facilities with a capacity of 50,000 $m^3$ per day were commissioned. That same year, a gravity sewer collector with a diameter of 1.5 meters and a length of 4.6 km was built. Archival documents report: "There were 8 public wells and 237 water collection pumps in the city" (36). However, due to the

high mineral content in the water from these sources, it was generally considered unsafe for drinking.

Deficiencies in the organization of the water supply system contributed significantly to increased morbidity, as water quality and accessibility are among the most critical factors in maintaining public health. Contaminated water is known to be a source of numerous diseases, including infectious ones. For example, between December 1963 and March 1964, an outbreak of epidemic hepatitis occurred in Tselinograd. The cause was the use of water from the railway's drinking water pipeline—intended for household and drinking purposes—which had been connected to the technical water supply system. The disease quickly reached epidemic proportions. In response, on March 24, 1964, the Council of Ministers of the USSR adopted Resolution No. 238, "On Urgent Measures to Improve Water Supply and Sanitation in the City of Tselinograd". This resolution required local authorities to immediately implement a plan to improve the city's water supply and sewerage systems, with 7.3 million rubles allocated in capital investments (34). However, as stated six months later by the city's chief sanitary inspector, A. Berina: "It should be noted that most of the deadlines for the execution of specific works established by the decree have been missed" (34).

The technical water supply intake was drawn from the Ishim River, downstream from the discharge point of the city's fecal sewer system. As a result, polluted water was supplied to the population instead of clean drinking water. A sharp decline in water quality, particularly near the railway junction, led to a rise in intestinal diseases. Of the total number of hepatitis cases, 81.5% of those infected had consumed water from the railway pipeline. A commission from the USSR Ministry of Health, which arrived from Moscow, reported that the local sanitary and epidemiological service, "despite having laboratory data indicating extreme pollution of the drinking water, failed to take action to stop this blatant sanitary violation" (37).

A similar situation developed in other regions of Northern Kazakhstan. For example, in the Pavlodar region in 1963, due to the negligence of railway junction management, contaminated water from the technical pipeline was connected to the drinking water supply. The chief sanitary officer, Tsoy, managed to shut down the technical water supply; however, for this action, he was dismissed from his position. The subsequent reconnection of the technical water supply to the drinking system provoked an outbreak of epidemic hepatitis (3).

Employees of the food industry, public catering services, and food stores also played a role in the spread of infection, as there was a high incidence of illness among them. A sanitary inspection revealed violations of sanitary regulations in every tenth sample of meat, fish, flour-based products, and items from children's dairy kitchens (38).

Contaminated drinking water was also a contributing factor to premature deaths in the region. Despite the Soviet government's declared policy of "protecting the health of mothers and children", child mortality rates remained high. The severity of the situation is illustrated by child mortality data from the Akmola region, which, in our view, should be regarded as biased and incomplete. According to approximate figures for 1958, out of 777 deaths recorded that year, 225 were due to infectious diseases (39). Unfortunately, such "records" were repeated in subsequent years.

Some diseases were directly or indirectly caused by a lack of access to safe water. Typhoid fever and trachoma, for instance, were exacerbated by water scarcity and were also transmitted through lice. In 1957, at the 1st City Hospital, inspections revealed repeated cases of secondary lice infestation among patients, along with poor sanitary conditions in the hospital and disinfection chamber, as well as dirty underwear and bed linen (24). Lice and flies contributed to the transmission of diseases in public spaces such as bathhouses, schools, buses, and hospitals. Due to the lack of systematic pest control, these insects became additional sources of infectious disease.

It was often impossible to prevent or contain the outbreak of epidemics. Small foci of infection could develop rapidly, and diseases frequently appeared in the least expected locations. For instance, in the summer of 1956, a typhoid epidemic began in a most unlikely place—the remote village of Krasnoe Ozero, which had fewer than 20 households. The village was situated far from major highways and was isolated from neighboring settlements by the vast steppe. Although doctors were dispatched urgently and managed

to contain the threat quickly, by the time they arrived, the entire population of the village had already been infected.

According to archival sources, periods of sanitary stability during this time were the exception rather than the rule. It is worth noting that despite significant shortcomings in the organization of water supply systems in the virgin land areas, for many years there was no designated official responsible for sanitary and educational work in the Tselinograd region (40). The region's difficult sanitary and epidemiological situation eventually led to the establishment of the Regional Sanitary and Epidemiological Station in 1963. However, at the time of its founding, it lacked both a standard building and a properly equipped laboratory (41).

### *Infrastructure issues*

Problems related to the quality of existing infrastructure should be mentioned among the key reasons for the high incidence of infectious diseases. In the 1950s, there was also a significant shortage of financial investment in the healthcare system. The increase in funding during that period barely covered the costs associated with population growth. At the time, the city's healthcare network included the 1st and 2nd city hospitals, with a total of 225 beds— of which 30 were designated for adult infectious disease patients and 35 for children. However, the space allocated for infectious disease care did not meet the actual demand. The bed availability rate stood at 4 beds per 1,000 residents (42), far below the minimum recommended standard of 9 beds per 1,000 urban residents. Based on this standard, the city of Akmolinsk required approximately 800 additional beds (43).

There were only two polyclinics in Akmolinsk, both housed in residential buildings not originally intended for medical use. These facilities failed to meet basic sanitary standards: there was no running water or sewerage, and heating was provided by stoves. Each clinic had only 5–6 rooms, making it impossible to offer a full range of medical services. As a result, doctor appointments were scheduled in three or four shifts, leading to long queues, delayed care, and widespread public dissatisfaction. The annual burden on outpatient services exceeded 170,000 visits.

The issue of childhood infectious diseases was particularly pressing in the region. Due to overcrowding in the children's infectious diseases department of the 2nd City Hospital, the hospitalization of children with mixed infections posed a major challenge. These patients were often placed in other departments. For example, in 1957, the surgical department was under quarantine for measles, scarlet fever, and mumps for a total of 102 days. Dysentery accounted for 31% of all hospitalizations—251 patients in total, including 58 with chronic dysentery (14 under the age of one), and 193 with acute dysentery (82 under the age of one). The mortality rate among these patients was 3% (44).

The high incidence among children, coupled with unresolved problems in the organization of prevention and treatment of childhood infectious diseases, brought the urgent need to renovate the children's department to the forefront. In this context, the following excerpt from a letter by V. Alekseyev, head of the City Health Department, addressed to the Council of Ministers of the Kazakh SSR, is especially telling: "Currently, there are more than 16,000 children in the city. Despite this, the city has only one children's hospital with 50 beds, which in no way meets the growing needs of the population. The hospital fails to meet basic sanitary standards: the cubic capacity is inadequate, there is no sewerage or running water, and the heating is stove-based. The hospital is adapted from an apartment building; the rooms are walk-through, and there is no more than two square meters of space per bed, making it impossible to maintain appropriate temperature control. In summer, temperatures reached 30°C and above; in winter, they often dropped to 10°C. In 1956, the hospital was quarantined more than 12 times. The above clearly demonstrates the urgent need to build a children's hospital with at least 100 beds" (42). This excerpt highlights, on the one hand, the competence of local healthcare administrators who were fully aware of the system's weaknesses, and on the other hand, their sincere efforts to address the situation and bring the issue to the attention of the republic's leadership.

However, due to a lack of funding for the construction of a new model hospital, the authorities decided to renovate the existing one. As one report critically stated: "The real evil was the renovation of

the pediatric infectious diseases department in the 2nd City Hospital in 1958" (45). The reduction in available space meant that the hospital no longer had dedicated isolation and observation wards for suspected cases, nor appropriate facilities for patients with mixed infections. The overcrowding of beds inevitably led to violations of sanitary protocols and contributed to the spread of infections.

As a result of the unsuitability of the premises, children with two or three different infections were often placed in the same ward. This created a risk of cross-infection, particularly among patients admitted with suspected—but not yet confirmed—infections, leading to in-hospital transmissions. In 1958, the diphtheria ward of the 2nd City Hospital was quarantined three times, and similar situations occurred in the city's nurseries. In Nursery No. 3, children were housed in cramped conditions, and their diet did not meet nutritional standards—lacking cottage cheese, curd-based products, kefir, fresh vegetables, fruits, and berries. These factors together contributed to the spread of infectious diseases (29). That same year, Nursery No. 1 was quarantined for measles for 90 days, for chickenpox for 37 days, and simultaneously for paratyphoid and hepatitis for 60 days (29).

The shortage of hospital beds was acutely felt in the Tselinograd region. While the standard rate was 6 beds per 1,000 population, actual availability was only 4.8 beds (a total of 2,035 beds), which was insufficient to meet the population's needs. Based on demographic data, the estimated demand for hospital beds was 2,729 in 1961, 2,919 in 1962, 3,124 in 1963, 3,343 in 1964, and 3,583 in 1965 (2).

A separate issue concerned the medical equipment available to doctors. The quality of diagnostic and treatment devices—including examination tools, surgical instruments, laboratory equipment, and other essential items—frequently drew complaints from medical staff. The shortage of equipment led to overburdened facilities. For instance, the city's only bacteriological laboratory was performing 700–800 intestinal group tests per day, significantly exceeding both the equipment's and the personnel's capacity. As a result, laboratory utensils could not be properly boiled and sterilized between uses, leading in some cases to refusals to test individuals who had been in contact with infected patients or those under dispensary observation (46). Taken together, these problems had a detrimental impact on the overall quality of medical care in the region.

## *"Personnel doesn't decide everything"*

Another reason for the rise in infectious diseases was the critical shortage of qualified medical staff. This long-standing issue in the Virgin Lands healthcare system led to a decline in the quality of medical training, which in turn contributed to a significant increase in diagnostic and treatment errors. Recent studies have shown that during the Virgin Lands Campaign, many medical professionals came to the Akmola region and played a major role in the formation and development of the local healthcare system (12). Their contribution is undeniable. However, in our view, one of the key factors contributing to the sustained rise in infectious diseases in the region was the shortage of personnel and the insufficient professional qualifications of some doctors. As rightly noted by the head of the *Tselinny Krai* Health Department, V. Mansvetashvili: "The population is growing rapidly—the shortage of medical personnel significantly slows down the development of healthcare in the region" (2).

By compiling published statistics from Soviet-era sources and supplementing them with archival materials labeled "for official use", we were able to question the reliability of official statistical reports. The data revealed a significant shortage of both medical and nursing personnel, contrary to the optimistic picture often presented in public documents. According to records from the City Health Department, the number of medical workers increased substantially during the early years of the Virgin Lands Campaign. Annual reports for the first three years indicated a threefold increase in personnel, attributed to both external and internal transfers. By 1963, the number of doctors had surpassed 1,000, and the number of mid-level medical workers exceeded 2,000 (according to other archival sources, these figures were 3,018 and 14,681, respectively) (3). Between 1955 and 1958, the Akmola Medical School graduated approximately 400 mid-level medical professionals, who were then assigned to Virgin Lands areas (1). It is worth noting

that reports from the regional health authority to the USSR Ministry of Health framed the personnel situation in terms of positive development dynamics. However, a more objective assessment is found in local-level documents, which indicate attempts by healthcare managers to "adjust" the figures to meet planned targets.

For example, official data from the City Health Department in 1956 indicated a shortage of 43 doctors needed to fill existing vacancies in the city of Akmolinsk (42). However, our independent review of statistical records showed that the actual number of doctors in Akmolinsk was 48 in 1956 and 70 in 1957. Among them, not a single epidemiologist, infectious disease specialist, sanitary doctor, or disinfection specialist was present (47). The number of mid-level medical workers in those years was 230 and 238, respectively. In 1957, the documented need was 124 doctors and 315 mid-level medical personnel (48). By 1963, the number of doctors had increased to 277. However, the availability of doctors per 10,000 people remained low—only 9.4 in urban areas and 3.0 (1) in rural areas—compared to the national average of 14.1 and the Soviet Union average of 22.1 (49).

The shortage of medical personnel was caused by a combination of objective and subjective factors. First and foremost, it is important to note that at the beginning of the Virgin Lands Campaign, doctors—like other settlers—faced extremely difficult living conditions. There was virtually no housing, frequent cases of illness among staff, and unfavorable climatic conditions, all of which contributed to high turnover among medical personnel (7). According to official statistics, the number of doctors increased annually to the extent that staffing needs should have been met. However, as noted by the head of the Regional Health Department, V. Mansvetashvili: "The major scourge of healthcare is the high turnover of medical personnel. In 1961–1962, 1,264 doctors and 4,253 mid-level medical workers arrived in the region. During the same period, 513 doctors and 2,854 mid-level medical workers left" (50). By 1964, the region was short of 1,600 doctors and over 3,000 mid-level medical workers, and 124 rural district hospitals remained understaffed. On average, up to 50% of the doctors sent to the region annually left for various reasons.

Work on the Virgin Lands was extremely demanding, and there was a shortage not only of medical personnel but also of skilled workers, including machine operators, tractor drivers, combine operators, milkmaids, and others. Throughout the period under review, it was not uncommon for doctors to take on "part-time" roles in seasonal agricultural labor – for example, working as manual laborers during haymaking or while harvesting potatoes and other vegetables, or even on construction sites (see Figure 1). These tasks were entirely unrelated to their professional responsibilities (51). One striking example comes from the Chernyshevsky state farm, where the director assigned the head of the local hospital to operate a planting machine for 10 days. During his absence, "the patients were left to fend for themselves, as the remaining paramedic was unable to provide qualified medical treatment" (3).

The departure of doctors, engagement in non-medical work, and other contributing factors led to disruptions in medical appointments and delays in patient diagnosis, which in turn resulted in late hospitalizations – and consequently, a rise in the incidence of infectious diseases (24).

## Climatic conditions

Another important factor to consider is the climate. Tselinograd is located in a sharply continental climate zone, meaning the region experiences sudden and extreme seasonal temperature fluctuations. Under

**Figure 1.** Doctors of the 2nd city hospital cleaning the streets of Akmolinsk, 1957. Photo from Zh. S. Mazhitova's personal archive.

such conditions, settlers arriving from the European part of the Soviet Union faced significant challenges with acclimatization and adaptation. Our comparative analysis of average summer temperatures in Tselinograd revealed the following pattern: in years when the average monthly temperatures—June (20.2 °C), July (20.5 °C), and August (19.8 °C) —exceeded the climatic norm, there was a noticeable surge in the incidence of diseases among the population (see Figure 2).

For example, in June of 1957, 1959, and 1963, high air temperatures were recorded in the city—26°C, 27°C, and 28°C, respectively. In July of 1954, 1962, and 1963, temperatures reached 27°C, 29°C, and 28°C. Elevated temperatures promote the rapid reproduction of infectious pathogens and create favorable conditions for the spread of acute airborne and fecal-oral infections. It is during these months that outbreaks of the aforementioned infectious diseases were recorded. For instance, in the summer of 1962, an outbreak of typhoid fever occurred at the Novo-Kolutonsky state farm in the Tselinograd region. Within the first seven months of that year, the incidence of the disease in the region tripled compared to the same period in 1960 (53).

The primary contributing factors to the outbreak were the extremely poor sanitary conditions on the state farm and the lack of access to safe drinking water, as the wells were not properly equipped. It is also worth noting that no sanitary cleaning had been conducted on the farm for several years.

Increased humidity (above 85%) also contributed to a rise in the incidence of acute respiratory viral infections. This is because moist air creates a favorable environment for bacterial and viral growth, leading to an increase in cases of influenza and upper respiratory tract infections (see Figure 3). During the summer months of 1958, 1960, 1961, and 1962, humidity levels ranged from 141.3% to 164.9%. Conversely, extremely low humidity (below 20%)—recorded in 1954, 1956, 1962, and 1963, with levels ranging from 4% to 12.7%—also had a detrimental effect on human health. The drying of the respiratory tract's mucous membranes caused cracking, which facilitated the entry and proliferation of viral pathogens.

## *"God gives and God takes away"*

Last but not least, one of the contributing factors to the high incidence of disease among the population was the religious beliefs and cultural values of the groups who migrated to the Virgin Lands from Moldova, Ukraine, Belarus, and Russia. The Soviet state's anti-religious policy, paradoxically, had the opposite of its

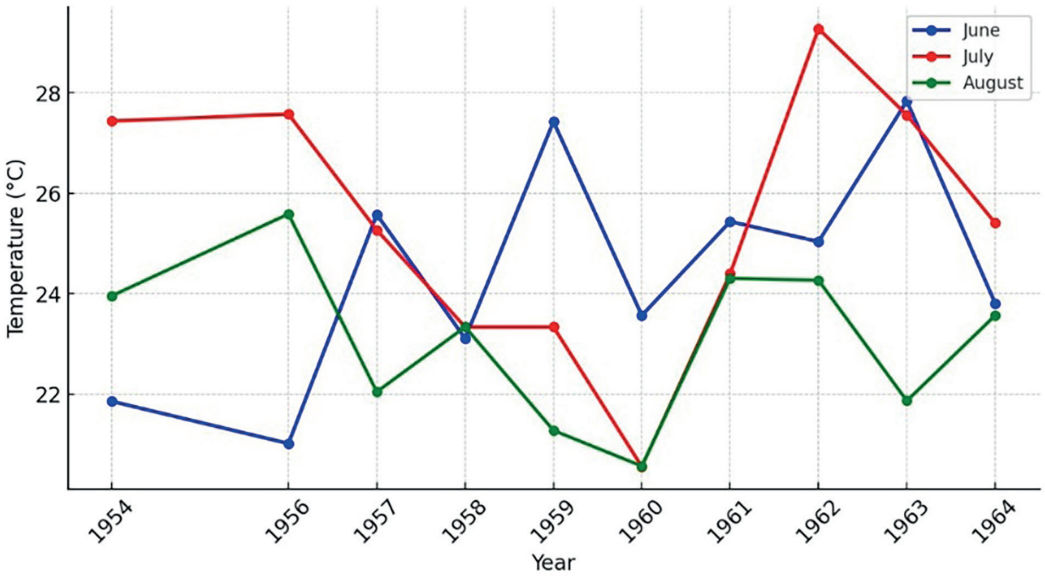


**Figure 2.** The average maximum temperature in the city of Tselinograd from 1954 to 1964 (June–August). Source: Compiled by the authors based on the geographic information system "Meteor measurements online" (52).

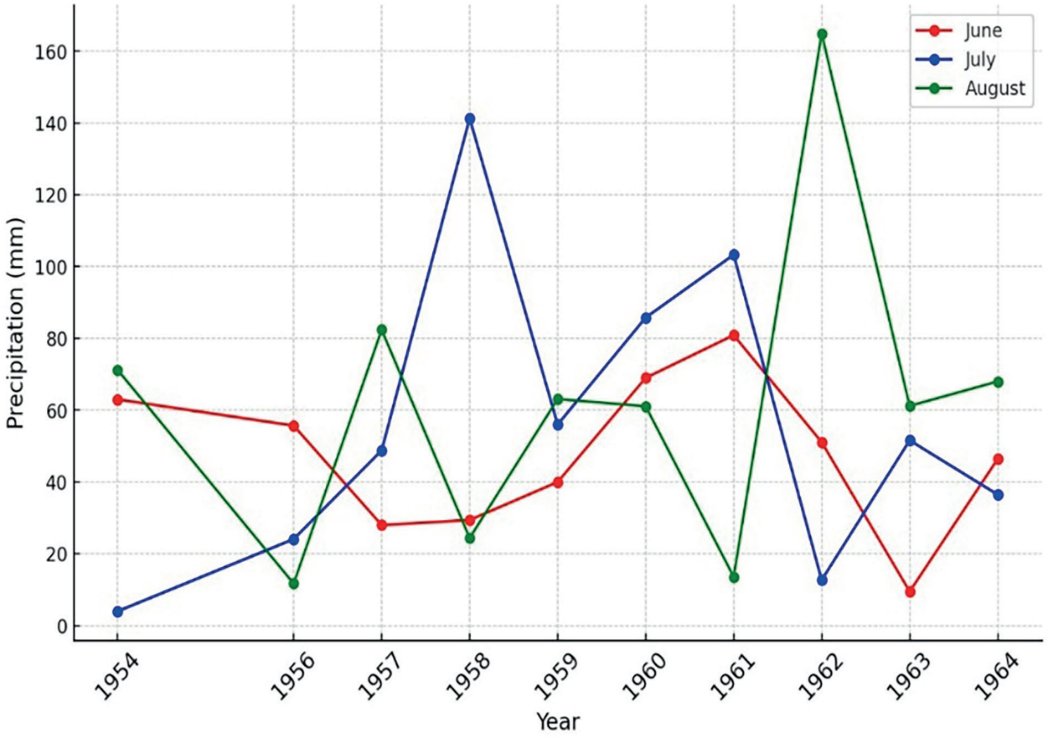


**Figure 3.** The amount of precipitation in the city of Tselinograd from 1954 to 1964 (June–August).
*Source*: Compiled by the authors based on the geographic information system "Meteor measurements online" (52).

intended effect: religious institutions retained their influence among the faithful. During this period, numerous religious communities—such as Mennonites, Adventists, Molokans, Pentecostals, Jehovah's Witnesses, and others—began to form in the Akmola region. These groups often lived in isolation, led closed communal lives, and preached values that were frequently at odds with the ideals promoted by the Soviet government. In practice, they expressed a latent form of protest by resisting medical interventions imposed by official authorities (54). As noted by A. Tishkov, the Commissioner for Religious Cults at the regional executive committee: "All Baptist associations have a reactionary, one might say, anti-Soviet orientation" (55). Acting according to the principle "God gave, God took", these communities often relied on religious "treatments", such as reading passages from sacred texts over the sick and performing ritualistic actions (55). Even during epidemics, visits from medical professionals failed to override their deeply rooted religious principles. As such, these numerous communities should be considered high-risk groups, as their beliefs and practices created environments conducive to the spread of pathogenic microorganisms.

## Conclusion

In summary, several conclusions can be drawn from the analysis presented above. The development of the Virgin Lands became a significant contributing factor to the sharp rise in the number and spread of infectious diseases among the population of the Akmola region during the period under study.

The collected and analyzed archival materials on the nature and causes of infectious diseases in the Akmola region from 1954 to 1965 challenge the prevailing view in historiography regarding the significant successes of public health in reducing infectious disease

incidence. Contrary to dominant scientific narratives, epidemic outbreaks—particularly among children—were not eradicated during this period. It can be concluded that while there were some isolated successes in combating specific infections, diseases such as diphtheria, poliomyelitis, upper respiratory tract infections, and tuberculosis showed no clear downward trend.

To explain this persistent problem, the authors analyzed a range of systemic issues that remained unresolved throughout the period. Chief among them was the ineffective implementation of preventive measures, coupled with the indecisiveness and inaction of the sanitary and epidemiological services, all of which contributed to rising morbidity.

Equally significant was the shortage of medical personnel and their inadequate professional training. Medical staff—considered the strategic resource of any healthcare system—were unprepared to deliver high-quality medical care due to a lack of infrastructure, housing, and practical skills, particularly among young professionals.

Thirdly, the harsh climatic conditions of the *Tselinny Krai* complicated the acclimatization process for newly arrived settlers and contributed to the spread of viral infections, further impeding progress in disease control.

The final issue examined was the religious beliefs prevalent among the population, which led members of religious communities to refuse treatment for infectious diseases and vaccination as a preventive measure.

The epidemiological data from this period demonstrate the inefficiency of the existing healthcare system, which lacked a unified treatment strategy, adequate infrastructure, and sufficient medical equipment. These deficiencies prevented the health authorities from establishing the necessary conditions for effective epidemic response. This complex set of challenges remained unresolved for a long time and continues to hold relevance for the broader public health landscape of the republic.

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