

Environmental issues of children's health in the Kazakh SSR (1941–1943)

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Abstract. The article discusses issues related to children's health care in the Kazakh SSR during World War II. Based on archival data the authors of the article concluded that the increase in child mortality in the early years of the war was due to the high incidence of infectious diseases such as whooping cough, diphtheria, dysentery, pneumonia, scarlet fever, measles, and others. The reasons were the shortage of the necessary number of medical institutions, their insufficient equipment and absence of qualified medical staff, untimely detection of diseases and late hospitalization, lack of quarantine boxes and certain percentage of unvaccinated children. Among other reasons there are low living standards of the population, poor sanitary conditions in some children's institutions, and nutritional problems of children. All this led to increased morbidity and mortality of children in the early period of the war.

1 Introduction

World War II was an enormous trial for the entire Soviet people. Children, as the most socially vulnerable part of society, reacted most sharply to all the negative changes in life during the war period [1–4]. Soviet children faced with new realities emerged in their lives which affected on their life and, of course, their health. Child mortality increased in both rural and urban areas. Food problems, daily hard physical labor, the lack of adequate medical facilities and medical staff had a negative impact on the health of the younger generation. Children were evacuated from the Byelorussian SSR, the Ukrainian SSR, the RSFSR, and the Kalmyk ASSR to Kazakhstan. Children arrived in overcrowded wagons, sometimes even in freight where there were no necessary conveniences and the sanitary conditions left much to be desired. The children were emaciated, sick, and curled up. The evacuation process contributed negatively to the spread of infectious diseases and the general deterioration of the health of evacuated children [5–8].

The state did not have the opportunity to pour large resources into children's institutions during the first years of the war. A number of publications by Z.G. Saktaganova, K.K. Abdrakhmanova and others are devoted to the study of gender issues during World War II. [9–10]. The health of children who attended nurseries, kindergartens, schools and boarding schools as well as those who lived in orphanages was monitored by medical staff. But

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despite this, there were cases of epidemiological diseases, diseases related to insufficient and varied nutrition, diseases associated with unsanitary conditions etc. It was especially difficult for children who were in children's reception centers, children's labor and labor-educational colonies where medical care for children was carried out on a case-by-case basis.

2 Materials and Methods

The authors used both general scientific and special methods of historical and medical research. Authors used analysis and comparison methods during working with tables which were made on the basis of archival data. Statistical research methods were widely used. Authors used archival documents from World War II.

3 Discussion of the results

3.1 Child mortality

The sanitary condition of the children was far from brilliant by the beginning of the war in the Kazakh SSR. In the first year of the war the sanitary condition deteriorated markedly and by the middle of the war period had not had a serious positive change. This led to high rates of child mortality. According to the 1939 census, the child population was 2,700 thousand under the age of 16, including children under 3 years old – about 700 thousand. According to official data (on February 1, 1942) about 200 thousand children arrived to Kazakhstan during the evacuation.

In 1941 the child mortality rate was 208.5 per 1,000 births and in 1942 it was 271.8 per 1,000 births. Particularly high rates were in the Petropavlovsk, Semipalatinsk, Ust-Kamenogorsk, and Chimkent regions. During 1942 child mortality increased in Alma-Ata, Kustanai and Ural regions. The above numbers are a very high indicator of child mortality. In the pre-war years the numbers were much lower. For example, in 1938 it was 147, in 1939 – 154, in early 1941 – 172 per 1000 births. Of course, these calculations must take into account the fact that the proportion of the child population was also increasing. The increase in the proportion of the child population was also due to evacuations during the war. The main causes were epidemiological diseases in evacuees and local children, as well as poor organization of medical care.

Child mortality rates were changing downward by 1943. With generally favorable numbers in the republic, the child mortality rate was 87 per 1,000 births in the first half of 1943. In the city this figure was 180 deaths per 1,000 births, and even in Alma-Ata this figure was 160. Consequently, the favorable figures were formed at the expense of the rural population. But given the insufficient completeness of the registration of child mortality in rural areas, it is necessary to refrain from a final estimation of mortality in the country as a whole, and in rural areas particularly. There were no strict records of births and deaths of children in rural areas. The urban figures against the background of the overall figure should have raised the question of combating child mortality in the cities of the Kazakh Republic. During the first year of children's life the main reason of infant mortality was pneumonia, which is for example was 60 deaths per 1,000 births in Alma-Ata. Mortality from tuberculosis was 5.3 in 1942 and 6.4 per 1,000 births in 1943. Other causes were 3.4 per 100 births.

According to the materials of the survey of children's institutions in the Karaganda region of the Kazakh SSR in 1943, mortality from epidemic diseases decreased by 12.5 times compared with 1942. Total mortality decreased 1.3 times. As the birth rate dropped to

4,078 in 1943 from 8,314 in 1941 and 7,926 in 1942, the natural increase in the population dropped from 14.4 in 1941 to 2.8 in 1943. There were shifts among children's mortality under 2 years: in Karaganda from 405 cases in 1942 to 251 in 1943, in Balkhash from 249 to 58, in Zhezkazgan region from 63 to 52, in Ulytau region from 58 to 16. High child mortality in relation to the total mortality was observed in Ulytau region – 1:1.5, Osakarovsky region – 1:4.6, in Karaganda – 1:10. The number of abortions in relation to births increased: 1:14.6 in 1941 and 1:9.7 in 1943.

There were frequent deaths of hospitalized children who were already receiving medical care in 1941 and 1942 years. But there was a noticeable downward trend in hospital mortality from epidemiological diseases by 1943.

For an example, we can observe a decrease in the child mortality in medical institutions in Karaganda (see table 1).

Table 1. Child Mortality in Karaganda hospitals in 1941, 1942, 1943 yy.

Hospital name	1941 y. (%)	1942 y. (%)	1943 y. (%)
Children's Hospital of the mine № 20	17.4	25.4	15.6
Novo-Tikhonovsky Hospital	4.6	13.1	7.1
Infectious Disease Hospital	7.7	7.0	3.4
Mikhailovsky Hospital	11.8	11.2	8.5
Kampaneyskaya Hospital	4.6	7.8	4.5

Late hospitalization of children for many diseases had a heavy impact on hospital mortality. Not all sick children with confirmed infectious diseases were hospitalized on the first day. Often this occurred on 2–4 days after conformation of diagnosis. And this may have been one of the causes of hospital mortality of children from epidemic diseases.

Thus, child mortality in the early years of the war increased. Among the main reasons are epidemiological diseases and the unsatisfactory state of medical care for mothers and children, as well as the inability of residents of remote settlements to seek medical help in the early years of the war.

3.2 Epidemiological diseases

In the first years of the war, the situation with children's epidemiological diseases became seriously aggravated. Funding for children's health care decreased the social and living conditions of many Soviet families deteriorated and the overall standard of living declined. Evacuation in unsanitary conditions also increased the spread of epidemiological and other diseases among children.

A noticeable shift in the fight against childhood infections occurred by 1943. For example, measles gave a sharp decline of 83% (per 10,000 population in 1943 4.1, down from 42.9 in 1942); diphtheria declined 28% (per 10,000 population 3.1 in 1943, down from 4.9 in 1942); scarlet fever declined 55%. Intestinal infections: dysentery down 48%, toxic dyspepsia down 62%. Medical institutions were better able to hospitalize and treat sick children. Lethality decreased: for diphtheria by 9.2 instead of 14 in 1942, for measles by 5.3 instead of 16 in 1942. The plan of vaccination against diphtheria in the republic for 9 months of 1943 was fulfilled by 87.9 %, but revaccination lagged behind – only 43.5 %. There were disruptions in the delivery of serum and anatoxin to the regions. Korean serum was fully supplied to the republic, but there were certain difficulties with delivery to remote areas (lack of transport, fuel, problems with medical staff).

There is an epidemiological situation in the republic during the war by the example of one of the regions of the Kazakh SSR. (See Table 2).

Table 2. Morbidity of infections among children in Karaganda region in 1942 and in 1943 yy.

Name of the disease	1942 y.	1943 y.	Reduced morbidity (%)
Measles	2855	188	6.5
Scarlet fever	305	157	51
Diphtheria	465	254	54
Dysentery	614	423	69
Toxic dyspepsia	1011	565	55.8
Whooping cough	599	289	51.7

Measles has almost completely disappeared in Karaganda region since June 1943. The incidence of scarlet fever, whooping cough and other infectious diseases decreased sharply. In order to achieve this result medical professionals of the Karaganda region vaccinated the children. For example, diphtheria vaccinations were supposed to cover 20,000 children and 2,400 revaccinations but in fact it was 19,456 children and 14,007 revaccinations in 1943. According to the plan, anti-diphtheria vaccinations had to cover children from 6 months to 12 years old. The necessary amount of inoculation material, syringes and needles was released. In order to cover unorganized children with diphtheria vaccinations, children's hospitals and doctor's offices had to register all unvaccinated children. The necessary amount of vaccine was allocated to medical organizations to combat measles and whooping cough in Karaganda region. In addition, beds for measles patients were organized at Mine Hospital No. 20. Gastrointestinal disease control measures were most successful in the collection of breast milk. For example, 5 tons of breast milk were collected in Karaganda region during the first 9 months of 1943. The hospitalization rate for toxic dyspepsia and dysentery was almost 100% also day hospitals were organized in the cities. But not all children were vaccinated because of the difficulties of delivering diphtheria vaccine to Karaganda region. In general, the region fulfilled the vaccination plan by 64.7%, revaccination – 105.7%.

There is an example of mortality of children from scarlet fever, diphtheria, and other diseases from 1941–1943 in table 3.

Table 3. Lethality by nosological entities in Karaganda region.

Name of the disease	1941 y. (%)	1942 y. (%)	1943 y. (%)
Scarlet fever	0.7	1.3	–
Diphtheria	6.9	12	7.5
Pneumonia	25.4	23	9.1
Toxic dyspepsia	25.6	41	25
Dyspepsia dystrophicus	13.4	21.7	6.6
Noma	–	100	78

As can be seen from the table, the mortality rate for illnesses was falling but was still significant by 1943. The reasons could be: untimely hospitalization, neglected illness, a weakened body etc. The data in table 3 refer to cases reported by health care providers. But the overall picture of childhood epidemiological diseases is quite difficult to trace since not all citizens had the opportunity to seek medical care for their children.

3.3 Medical and preventive institutions for provision medical help for children in the republic

A number of institutions of the People's Commissariat of Health, such as children's clinics, children's hospitals, outpatient clinics, dairy kitchens, nurseries, etc., were working to cover the children's population with medical care in the republic. Kazakh SSR had the following network of children's medical and preventive institutions in 1942 and 1943:

Table 4. List of treatment and prophylactic institutions in the Kazakh SSR in 1942 and 1943.

№	Name of institutions	1943 y.			1944 y.		
		City	Rural areas	Total	City	Rural areas	Total
1	Consultations	78	118	196	85	172	257
2	Dairy kitchens	59	55	114	66	55	121
3	Children's clinics	18	–	18	19		19
4	Children's hospitals	28	10	38	35	12	47
5	Orphanages	13	3	16	13	1	14
6	Nurseries	197/ 12634	308/ 7021	505/ 196 55	239/ 15829	316/ 8546	555/ 24375

There was an increase in the number of almost all medical and preventive institutions in cities and in rural areas in 1943. 118 consultations from 1942 were in rural areas in 1942 and the network of consultations was close to the children's population. Other institutions are mostly concentrated in the city. There were 700 to 1,000 children under the age of 3 per doctor in the city, and 1,000 to 1,200 in the district center. Only in some cities this ratio was broken: there were as many as 1 district doctor for 1,500 children. The network of children's polyclinics and outpatient clinics was extremely inadequate and poorly equipped across the republic.

Children's hospitals were absent in 56 rural districts of the republic. They were placed in little-adapted rooms as a rule. A system of district services for children was introduced in all hospitals of the city. Children under the age of one and weakened children under the age of three were mostly on patronage which, unfortunately, was not conducted clearly enough. Home care for sick children was provided by district pediatricians everywhere but it was very difficult due to the lack of transportation [11–13].

The number of milk kitchens was insufficient. The capacity of the existing kitchens was not sufficient to cover the needy children's contingents. In addition, they were extremely poorly supplied with the necessary equipment especially by large pots and bottles. For example, Alma-Ata kitchens cooked in small old dishes and food was given out in parents' dishes, which created queues and deprived them of the opportunity to sterilize dishes. The second major drawback in the work of the dairy kitchens was the extremely poor supply them by dairy products locally. Children's institutions had no specialized funds and all products were allocated at the discretion of regional and district organizations. In fact, children's institutions received only 30–40% of the milk they needed. This volume could not cover all the children's need and did not comply with the order for the manufacture of mixtures.

At birth, children were placed on patronage records and patronage nurses had to monitor the health of the mother and child. These measures allowed to increase the level of medical care, avoid serious health problems for newborns. Newborns from Karaganda, Semipalatinsk, Akmola, South Kazakhstan, and North Kazakhstan regions were more thoroughly covered by patronage up to 5–7 days. A number of regions kept records of

weakened and endangered children, accurately counted their number by nursery, consultation, monitored the dynamics of their development, the state of their health, provided specialized assistance, recreational activities, enhanced nutrition through milk kitchens and patronage. Thus, in Karaganda region there were 549 children registered as dystrophic by January 1, 1944, and – 356 by January 1, 1945. There are 200 dystrophics in Balkhash and 22 have been removed from this condition. The lack of a regular supply of milk and vegetables to children's institutions and dairy kitchens hampered the recovery of dystrophies. The same work was conducted in Alma-Ata: records were kept of endangered children in the areas, providing them with medical and nursing care, winter sanitation, placement of chronic dysentrics in special hospitals and departments. Twenty-one additional branches of children's clinics were deployed. The best progress was made in Dzhambul and West Kazakhstan regions. Most of them were middle-level medical workers and partially district doctors.

The condition of pediatric staff in Kazakhstan was alarming: there were 591 people by January 1, 1943 and there was a tendency of decrease. In the early years of the war, many doctors were drafted to the front, and highly qualified doctors did not return from missions. According to the plan 323 pediatricians were working in the cities of the republic by 1945, in fact only 233 people were working.

There were 182 rural district pediatricians in 1943, but there were 144 (74% of them) on January 1, 1944. By the end of the year, there was a shortage of doctors and nursing staff. Twenty-five districts were without pediatricians. The plan for 1945 was 165 pediatricians in the districts, but there were only 114.

In connection with the children's evacuation in the second half of 1941 there was a sharp increase in the number and capacity of orphanages – from 10 homes with 445 beds to 16 with 146 beds. By 1943 the overcrowding had been reduced through adoption and patronage. 528 children were adopted in 1941 and 626 in 1944 in all regions of the Kazakh SSR.

The increase in nurseries was mainly due to compaction in 1944. But new nurseries were opened: in Aktobe for 20 places, in Dzhambul for 20, nurseries in Alma-Ata, Chimkent, Semipalatinsk were transferred to double regime. The duration of stay at the nurseries was 12–14 hours. In large cities (Alma-Ata, Karaganda, Kzyl-Orda, Ust-Kamenogorsk, Semipalatinsk, Chimkent) there were special quarantine groups for children with loose stool, tuberculosis and pertussis [14]. Medical care was provided by nurses. Some nurseries had doctors, or children in the nursery were supervised by district doctors and district pediatricians. Sanitary conditions in most institutions were satisfactory. Many nurseries were equipped with hard and soft equipment; there were children's literature and toys. Some of the best nurseries were in Alma-Ata – No 12, 25, 2; in the South Kazakhstan region – nurseries of Chimkent lead plant; in the East Kazakhstan region – Ust-Kamenogorsk nursery named after March 8 and Leninogorsk nursery No 2.

The system of the People's Commissariat of Education controlled the activities of other institutions for children, such as kindergartens [15–16], schools, etc. There were 735 kindergartens with 52,041 children in the republic by the beginning of 1944. They were served by doctors of children's consultations and children's polyclinics. Directly supervised by district pediatricians, heads of consultations or polyclinics, they also conducted therapeutic and preventive work, such as vaccinations, revaccinations, fagging. The number of doctors in kindergartens was: in 1944 – 133, in 1945 – 155. Nurses: in 1944 – 246, 1945 – 402. In Karaganda region there were 9 doctors in 1944, 15 in 1945, in the South-Kazakhstan region – 14 in 1944, 18 in 1945, in the East-Kazakhstan region – 10 in 1944, 16 in 1945.

But the provision of specialized medical care for children was still a sore point. In large cities, doctors' appointments with specialized care have been organized, but due to a lack of

specialists, this work was insufficient [17]. Due to interruptions with electricity, x-ray units and physioapparatus work was insufficient in Almaty, Semipalatinsk, Dzhambul, and Ust-Kamenogorsk. Clinical and diagnostic laboratories did not have enough reagents and utensils.

There were 7,596 schools with 699,184 students in the republic during the 1943–1944 school years. There were 586 schools with 193,344 students in the cities, 7010/505840 in the rural areas. Medical and sanitary service in cities was conducted by district pediatricians, in rural areas – by doctors and nurses at the doctor's district. Sanitary condition of most schools was satisfactory (West Kazakhstan, Almaty, Aktobe, Karaganda regions). School buildings and school equipment were repaired. Great help was provided by collective and state farms and enterprises. A common shortcoming of schools was the lack of water tanks and the issue of boiled water, which could lead to the spread of gastrointestinal infections among students. Daily medical examinations of students were conducted. In children's institutions of the People's Commissariat of Health of the USSR system there was a serious problem with the supply of food, equipment, uniforms. The subsistence farms that had been set up at some of the institutions for children were a good help in coping with the problem of nutrition. For example, the Children's Hospital in Dzhambul, having a good subsidiary farm, was able to put the issue of child nutrition in the hospital on the proper height. The issue of equipping of children's medical and preventive institutions was unsatisfactory. During the war, children's institutions were hardly replenished with soft equipment and if they were, then in insufficient quantities. There was a very acute shortage of coats, shoes, and sleeping bags in the nursery. Therefore, children spent most of the day indoors during the winter. The provision of children's institutions with rice and semolina did not exceed 20–30%. The issue of supply has been raised repeatedly, but has not received a positive resolution. Children's cards were not introduced and children received nothing except sugar and bread in the cities of Kazakhstan (except Karaganda). Rice, semolina and dairy products were allocated through a network of pharmacies for sick children on prescriptions in Alma-Ata. Poor nutrition of the child population also had a negative impact on children's health in republic.

4 Conclusion

The health of the younger generation was a priority for the state, but unfortunately not during the war time. Thus, we were able to establish the main reasons for the deterioration of children's health, especially in the early years of the war by analyzing the medical care of children in the Kazakh SSR during World War II, epidemiological diseases and on the work of medical and preventive institutions based on data on child mortality. These reasons include the following: incomplete coverage of the child population with medical care, insufficient vaccination, lack of health workers, deterioration of the standard of living of the population.

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