

ISSN 2414-0244

Научно-периодический журнал «Здоровье человека, теория и методика физической культуры и спорта». - 2025. - 38 (2)

Раздел 2. МЕДИКО-БИОЛОГИЧЕСКИЕ ПРОБЛЕМЫ ЗДОРОВЬЯ ЧЕЛОВЕКА

DOI: [https://doi.org/10.14258/zosh\(2025\)2.14](https://doi.org/10.14258/zosh(2025)2.14)

УДК: 617-089-053.2:355.511.512(547.41)

ПОКАЗАТЕЛИ ГОСПИТАЛИЗАЦИИ И ДИСПАНСЕРНОГО УЧЕТА ДЕТСКОГО НАСЕЛЕНИЯ У ДЕТСКИХ ХИРУРГОВ В АБАЙСКОЙ ОБЛАСТИ, 2023-2024 ГГ.

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HOSPITALIZATION AND DISPENSARY REGISTRATION INDICATORS OF THE CHILD POPULATION WITH PEDIATRIC SURGEONS IN THE ABAY REGION, 2023-2024

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Следует цитировать / Citation:

Жумжанов Е.А., Балашкевич Н.А., Шалгумбаева Г.М. Показатели госпитализации и диспансерного учета детского населения у детских хирургов в Абайской области, 2023-2024 гг. //Здоровье человека, теория и методика физической культуры и спорта. 2025. 2 (38). URL: <http://journal.asu.ru/index.php/zosh>. DOI: [https://doi.org/10.14258/zosh\(2025\)2.14](https://doi.org/10.14258/zosh(2025)2.14)

Zhumazhanov Y.A., Balashkevich N.A., Shalgumbayeva G.M. (2025). Hospitalization and dispensary registration indicators of the child population with pediatric surgeons in the Abay region 2023-2024. Health, physicalculture and sports, 2 (38). URL: <http://journal.asu.ru/index.php/zosh>. DOI: [https://doi.org/10.14258/zosh\(2025\)2.14](https://doi.org/10.14258/zosh(2025)2.14)

Поступило в редакцию / Submitted 31.03.2025

Принято к публикации / Accepted 03.04.2025

Аннотация. *Цель:* Настоящее исследование направлено на оценку текущего состояния и выявление тенденций развития детской хирургической помощи в Абайской области Казахстана путём сравнения ключевых показателей за 2023 и 2024 годы. Особое внимание уделяется числу детей, находящихся под диспансерным наблюдением, а также уровню госпитализаций по поводу хирургических заболеваний на 100 000 детского населения. *Материалы и методы:* Исследование основано на официальной статистике медицинских учреждений региона и включает данные о количестве специализированных детских хирургических коек, эндоскопических вмешательствах, численности медицинского персонала, операционных залах и диагностическом оборудовании. Проведён количественный и сравнительный анализ инфраструктуры, кадрового состава и объёмов медицинской помощи. Показатели диспансерного учёта и госпитализации рассчитаны на 100 000 детей. *Результаты:* Результаты выявили значительные различия между районами. В некоторых из них (например, Жарминский и Аягозский) отмечены положительные тенденции по диспансерному наблюдению и увеличению числа госпитализаций, в то время как в других (Кокпектинский, Курчатов и Бородулихинский) полностью отсутствует хирургическая активность в педиатрии. Эти различия отражают неравномерное распределение ресурсов, кадровый дефицит и возможные проблемы в системе маршрутизации пациентов. Исследование выявляет как положительные изменения, так и критические недостатки в системе детской хирургии Абайской области. *Вывод:* Несмотря на отдельные успехи, детская хирургическая служба в Абайской области по-прежнему испытывает нехватку ресурсов, особенно в сельских и отдалённых районах. Полученные данные требуют принятия управленческих мер по устранению дефицита кадров, модернизации инфраструктуры и обеспечению равного доступа к специализированной помощи на всей территории региона.

Ключевые слова: детская хирургия, госпитализация, диспансерное наблюдение, региональное здравоохранение, Абайская область, Казахстан, доступность медицинской помощи.

Annotation. *Aim:* This study aims to evaluate the current state and development trends of pediatric surgical care in the Abai Region of Kazakhstan by comparing key indicators for 2023 and 2024. Particular attention is given to the number of children under dispensary supervision and the hospitalization rate for surgical diseases per 100,000 children. *Materials and Methods:* The study is based on official statistics from regional medical institutions, including data on pediatric surgical beds, endoscopic procedures, medical staff, operating rooms, and diagnostic equipment. A quantitative and comparative analysis was conducted to evaluate infrastructure, workforce, and service delivery. Dispensary registration and hospital admission rates were calculated per 100,000 children. *Results:* The results demonstrate significant variation across districts. While some areas (e.g., Zharma and Ayagoz districts) showed positive trends in outpatient monitoring and increased hospitalizations, other districts (e.g., Kokpekti, Kurchatov, and Borodulikha) reported a complete absence of pediatric surgical activity. These disparities reflect uneven resource distribution, limited staffing, and possible inefficiencies in patient routing. The study highlights both areas of progress and critical deficiencies in the pediatric surgical system of the Abai Region. *Conclusion:* Despite some improvements, the pediatric surgical service in the Abai Region remains under-resourced, especially in rural and remote districts. The findings call for administrative action to address staffing shortages, modernize infrastructure, and ensure equitable access to specialized care across the region.

Keywords: pediatric surgery, hospitalization, dispensary supervision, regional healthcare, Abai Region, Kazakhstan, health system accessibility

Introduction. Pediatric surgical care occupies a special place within the healthcare system, as children require highly specialized, delicate, and timely medical interventions tailored to the anatomical and physiological characteristics of the developing body. According to the World Health Organization and international professional associations, the provision of accessible and high-quality surgical care for children is considered one of the key indicators of a well-functioning national healthcare system (Meara, 2015, Bickler, 2019, Mischenko, 2021, Romanova, 2022).

Despite substantial efforts aimed at modernizing the healthcare sector, pediatric surgery in the Republic of Kazakhstan continues to face a number of serious challenges. These include the unequal distribution of human and technical resources, limited access to specialized care in remote and rural areas, and the lack of systematic monitoring and analysis of key indicators of pediatric surgical activity (Stewart, 2015, Weiser, 2008, Mischenko, 2023).

In 2015, The Lancet Commission on Global Surgery emphasized the necessity of integrating surgical care into universal health coverage strategies, noting that millions of children worldwide lack access to even basic surgical services (Alkire, 2015, Mischenko, 2022). It is estimated that up to 1.7 billion children require surgical care, with a significant proportion residing in low- and middle-income countries, including Kazakhstan. Failure to provide timely treatment for surgical conditions in childhood can lead to disability, chronic health problems, and even death.

Analyzing the state of pediatric surgery in specific regions of Kazakhstan is therefore essential for forming an objective understanding of the accessibility and quality of specialized care. In this context, particular attention should be given to the Abai Region, established in 2022 and comprising the territories of the former Semipalatinsk Region. The region's new administrative status necessitates a reassessment and structural adjustment of its healthcare system, including pediatric surgical services.

The aim of this study is to assess the current state and dynamics of pediatric surgical care in the Abai Region based on a comparative analysis of 2023 and 2024 data, focusing on the number of children under dispensary supervision by pediatric surgeons and the hospitalization rate for surgical diseases. The results will help identify both positive trends and critical areas that require administrative action at regional and national levels.

Materials and Methods. The primary data were obtained from the official reports of medical institutions in the region, including statistical indicators on the number of specialized pediatric surgical beds, endoscopic procedures, and the staffing levels of medical personnel (pediatric surgeons and anesthesiologists-resuscitators). Additional data included the availability of operating rooms and modern diagnostic equipment (such as high-end ultrasound machines, X-ray units, computed tomography scanners, laparoscopic systems, and various types of endoscopes). Indicators of the average length of hospital stay were also analyzed. The study encompassed all major medical institutions in the region that provide surgical care to children, including central district hospitals (CDHs), multiprofile district hospitals (MDHs), and urban hospitals. A quantitative analysis of the infrastructure and human resources of the pediatric surgical service in the region's medical institutions was conducted, along with a comparative analysis of indicators for 2023 and 2024 to identify dynamics and trends. The analysis included indicators of dispensary registration and hospitalization of children for surgical diseases per 100,000 of the pediatric population, calculated based on data from regional healthcare authorities and institutional statistics.

Results. Abai Region is an administrative and territorial unit of the Republic of Kazakhstan, located in the northeastern part of the country. The region was established on June 8, 2022, in accordance with the decree of the President of Kazakhstan dated May 4, 2022. The territory of Abai Region includes the same areas that were part of the former Semipalatinsk Region before 1997. The region consists of 10 districts and 2 cities of regional significance.

The healthcare system of Abai Region, like any other regional healthcare structure, reflects the overall processes of modernization, staffing and resource enhancement, as well as organizational transformation aimed at improving the accessibility and quality of medical care for children.

One of the key aspects in assessing the state of pediatric surgical services is the analysis of two important indicators: the number of children under the dispensary supervision of a pediatric surgeon, and the hospitalization rate for surgical diseases per 100,000 children.

A comparison of data from 2023 and 2024 provides insight not only into the current situation but also reveals trends that require attention from the healthcare management system (Table 1)

Table 1

Hospital admission rates per 100,000 children in the Abai region

Districts	They are registered with a surgeon		Hospitalization of children for surgical diseases	
	2023	2024	2023	2024
Urjarsky	217,5	205,9	1134,6	1074,0
Makanchinsky	40,9	37,9	463,9	569,0
Borodulikhinsky	26,1	0,0	4571,0	966,2
Abai	202,0	191,0	252,5	191,0
Beskaragaisky	24,1	22,7	1688,8	45,4
Kurchatov	0,0	0,0	9155,5	0,0
Zharminsky	214,1	281,5	14555,8	527,8
Aksuatsky	45,1	0,0	1787,9	2196,3
Sharsky	140,0	191,2	8121,0	682,7
Kokpektinsky	0,0	0,0	17039,9	1032,0
Ayagozsky	87,0	63,1	1130,6	2144,5

The indicator reflecting the number of children under the supervision of a surgeon either remained at a low level or showed a downward trend in most districts of Abai Region. For example, in the Central District Hospital of Urjar District, there was a slight decrease from 217.5 in 2023 to 205.9 in 2024. A similar trend was observed in the Abai District Hospital (a decrease from 202.0 to 191.0) and in the Makanshy District Hospital (from 40.9 to 37.9).

These changes may be attributed either to improvements in preventive and outpatient care or, conversely, to a decline in the coverage of the pediatric population by scheduled check-ups and preventive monitoring.

Against this backdrop, the Zharma Central District Hospital stands out as a positive example, demonstrating a confident increase in this indicator - from 214.1 to 281.5. This may indicate active implementation of medical check-ups, the presence of a well-staffed surgical service, and effective patient routing.

However, in a number of districts (Kokpekti, Kurchatov, Borodulikha, and Aksuat), the values remain at zero, which requires separate analysis. Such a situation may be due to the absence of pediatric surgical personnel, a disorganized system of patient registration and monitoring, or limited access to healthcare facilities in general.

The hospitalization rate shows more pronounced fluctuations and, in some cases, sharp changes, which require close attention.

For example, in the Zharma Central District Hospital, there was a significant decrease in hospitalizations - from 14,555.8 in 2023 to 527.8 in 2024. This may indicate a revision of patient routing, possible centralization of surgical care, or restrictions in access to surgical beds.

A similar situation is observed in the Kurchatov City Hospital, where the rate dropped from 9,155.5 to 0.0. Such a dramatic decrease to zero may suggest a temporary suspension of surgical activity or the transfer of all pediatric surgical cases to other facilities.

The Kokpekti Central District Hospital also shows a significant decrease - from 17,039.9 to 1,032.0 - which requires clarification in terms of organizational processes within the medical facility and the district healthcare administration.

On the other hand, there are instances of increased hospitalizations, which may reflect either a growing demand for surgical care or more active patient routing. For example, in the Central District Hospital of Ayagoz District, the number of hospitalizations rose from 1,130.6 to 2,144.5, and in the Aksuat Central District Hospital - from 1,787.9 to 2,196.3. This may indicate an expansion in the range of services provided, improvements in diagnostic capabilities, or, conversely, an increase in the incidence of conditions requiring surgical intervention.

It is also worth noting the hospital in the Makanshy District, where the indicator increased from 463.9 to 569.0. This may reflect positive changes in access to surgical care, despite the limited staffing resources identified in the earlier analysis.

Conclusion. Despite some positive examples, the overall state of pediatric surgical services in Abai Region is characterized by insufficient resource provision. There is a noticeable shortage of personnel, equipment, and hospital beds - particularly in rural and remote areas - which hinders the development and accessibility of specialized care.

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ISSN 2414-0244

Научно-периодический журнал «Здоровье человека, теория и методика физической культуры и спорта». - 2025. - 38 (2)

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DOI: [https://doi.org/10.14258/zosh\(2025\)2.14](https://doi.org/10.14258/zosh(2025)2.14)

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