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PECULIAR FEATURES OF PROVISION OF MEDICAL CARE TO THE POPULATION IN THE ARCTIC REGIONS OF THE REPUBLIC OF SAKHA (YAKUTIA)

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ABSTRACT. The organization of qualified and specialized medical care in the regions of the Arctic zone of the Russian Federation has its own peculiarities that require making professional decision at the federal and regional levels. In recent years, specific health problems in the regions of the Arctic zone of the Russian Federation have attracted close attention. On the example of the Republic of Sakha (Yakutia), peculiar features of the healthcare system in the context of medical and demographic indicators are presented. The article analyzes the official reports of the Yakut Republican Information and Analytical Center of the Ministry of Health of the Republic of Sakha (Yakutia) for the period from 2000 to 2021 in connection with a content analysis of medical and demographic indicators characterizing the features of medical care to the population in the Arctic regions of the Republic of Sakha (Yakutia). In the Arctic regions of the Republic of Sakha (Yakutia) in dynamics since 2000 the amount of the population that tends to decline, rather a low provision of medical personnel (doctors and secondary medical workers) and a high need for air ambulance is revealed. The above mentioned items highlight the urgent need for extraordinary measures in the organization of medical care in the regions of the Arctic zone of the Russian Federation. In this regard, the development of Arctic medicine, as a special direction, will allow solving issues at the state level: staffing in healthcare; provision of qualified and specialized medical care; validity of the use of air ambulance.

KEY WORDS: population size; provision by doctors; sanitary aviation; Arctic regions; Arctic medicine; Yakutia.

ОСОБЕННОСТИ МЕДИЦИНСКОЙ ПОМОЩИ НАСЕЛЕНИЮ В АРКТИЧЕСКИХ РАЙОНАХ РЕСПУБЛИКИ САХА (ЯКУТИЯ)

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РЕЗЮМЕ. Организация квалифицированной и специализированной медицинской помощи в регионах Арктической зоны Российской Федерации имеет свои особенности, требующие решения на федеральном и региональном уровнях. В последние годы к проблемам здравоохранения регионов Арктической зоны Российской Федерации приковано пристальное внимание. На примере Республики Саха (Якутия) представлены особенности системы здравоохранения в контексте медико-демографических показателей. В статье проведен анализ официальных отчетов Якутского республиканского информационно-аналитического центра Министерства здравоохранения Республики Саха (Якутия) за период с 2000 по 2021 гг. в сочетании с контент-анализом медико-демографических показателей, характеризующих особенности медицинской помощи населению в арктических районах Республики Саха (Якутия). Выявлено, что в динамике с 2000 г. в арктических районах Республики Саха (Якутия) сохраняется тенденция к снижению численности населения, достаточно низкая обеспеченность медицинскими кадрами (врачами и средними медицинскими работниками), высокая потребность в санитарной авиации. Все это указывает на необходимость неординарных решений в организации медицинской помощи в регионах Арктической зоны Российской Федерации. В этой связи развитие арктической медицины как особого направления позволит на государственном уровне решить вопросы кадрового обеспечения в здравоохранении, доступности квалифицированной и специализированной медицинской помощи, обоснованности использования санитарной авиации.

КЛЮЧЕВЫЕ СЛОВА: численность населения; обеспеченность врачами; санитарная авиация; арктические районы; арктическая медицина; Якутия.

INTRODUCTION

Providing qualified and specialized medical care to the inhabitants of the Arctic zone of Russia becomes especially significant and poses a problem of state importance [1, 5, 8, 9]. The Arctic regions of Russia need a certain independence in organizing and solving the main problems and tasks in providing medical care to the population in these territories. We believe that there are bold and sometimes extraordinary solutions in the field of Arctic medicine. The peculiarity of medical care in the Arctic regions is underpowered low-capacity hospitals, low availability of medical staff, high demand for qualified and specialized medical care, sanitary aviation, and on-site medical check-ups [3, 4, 7]. This is not the whole list of problems and tasks that require timely and immediate solution. Methodological approaches in the development and implementation of Arctic medicine are already being widely discussed in Russia [1, 2, 6, 8]. Undoubtedly, the joint efforts of health care organizers, practitioners, and scientists will improve the medical care in the Arctic.

AIM

To analyze main medical and demographic indicators in the Arctic regions of the Republic of Sakha (Yakutia) in order to determine main directions for improving the health care system in the regions of the Arctic zone of the Russian Federation by taking the Republic of Sakha (Yakutia) as an example.

MATERIALS AND METHODS

Official reports of the Yakutsk Republican Information and Analytical Center of the Ministry of Health of the Republic of Sakha (Yakutia) were analyzed for the period from 2000 to 2021. Content analysis was carried out.

RESULTS AND DISCUSSION

The study period is marked by a general decline in the population of the Arctic zone of the Republic of Sakha (Yakutia). Accordingly, the number of children's population is also decreasing. However, there is an increase in the number of population in certain districts — Oleneksky and Eveno-Bytantai districts. In addition, it is possible to establish some increase in the number of population in six municipalities: Anabarsky, Zhigansky, Momsky, Oleneksky, Ust-Yansky, Eveno-Bytantai in recent years (Table 1). It must be noted that the increase occurs in the districts where the traditional way of life is preserved.

97 medical organizations operate in the Arctic regions of the Republic of Sakha (Yakutia): 13 central district hospitals (CDH), 36 district hospitals (DH), 1 city hospital (CH), 7 outpatient clinics (MD), 8 tuberculosis dispensaries (TB), 31 rural medical posts with obstetric units (RMPOU), 1 rural medical post (RMP). These organizations are specialized in providing medical care in vast territories with low population density, which affects the completeness of both material and technical equipment and staffing.

Close attention to the Arctic exploration and the health of the population has positive aspects in better equipping medical organizations, as well as launching the construction of new buildings. Owing to the National Project

Table 1

Population dynamics in the Arctic regions of the Republic of Sakha (Yakutia) for 2000–2021, number of people

Таблица 1

Динамика численности населения в арктических районах Республики Саха (Якутия) за 2000–2021 гг., человек

Районы / Districts	Годы / Years						
	2000	2005	2010	2015	2020	2021	Динамика за 20 лет, % / Dynamics over 20 years, %
Абыйский / Abyysky	5228	4649	4112	4125	3949	3916	–25,1
Аллаиховский / Allaikhovsky	4421	3203	2904	2733	2697	2697	–39,0
Анабарский / Anabarsky	3757	4113	3682	3387	3653	3672	–2,3
Булунский / Bulunsky	10 420	9495	9366	8404	8513	8501	–18,4
Верхнеколымский / Verkhnekolymsky	6662	5314	4712	4287	4003	3984	–40,2
Верхоянский/ Verkhoyansky	15 928	12 695	11 765	11 528	11 059	10 989	–31,0
Жиганский / Zhigansky	4849	4187	4047	4246	4112	4179	–13,8
Момский / Momsky	5243	4699	4383	4218	3974	4051	–22,7
Нижнеколымский / Nizhnekolymsky	8147	5460	4879	4426	4260	4228	–48,1
Оленекский / Oleneksky	4206	4111	4026	3967	4247	4326	2,9
Среднеколымский / Srednekolymsky	9415	8240	7774	7497	7332	7312	–22,3
Усть-Янский / Ustyansky	15 097	9398	8262	7244	7008	7035	–53,4
Эв.-Бытантайский / Ev.-Bytantaysky	2783	2781	2811	2798	2845	2879	3,4
Итого по АР / Total by AR	96 156	78 345	72 723	68 860	67 652	67 769	–29,5
Всего по РС (Я) / Total by RS (Y)	962 479	950 668	949 400	956 896	971 996	982 000	2,0

"Health Care", a number of Arctic regions are undergoing modernization and complete re-equipment, as well as launching the construction of new buildings for hospitals and rural medical posts. Major repairs have been carried out in three health care organizations: the inpatient department of the Allaihov and Bulun CDHs, and the surgical department of the Ust-Yanskaya CDH. Modular constructions for outpatient clinics were delivered and installed in Nelemnoye village of Verkhnekolymsky ulus, Kyusyur village of Bulunsky District, Eginsk village of the Verkhoyansk District, Ust-Kuiga village of the Ust-Yansky District. A rural medical post with an obstetric unit (RMPOU) was set up in the village of Beryelyakh, Allaihovsky District.

The Arctic regions of the Republic of Sakha (Yakutia) (RS (Y)) still face a very serious problem with medical personnel. As shown in Table 2, the staffing with physicians in the Arctic regions of RS(Y) is 59.9% (76.2% in RS (Y)), and the staffing with mid-level medical personnel is 70.3% (82.3% in RS (Y)). Zhigansky and Oleneksky Districts have the highest rates of staffing with medical personnel (83 and 84.2%, respec-

Table 2

Staffing and staffing level in the Arctic regions of the Republic of Sakha (Yakutia)

Таблица 2

Штаты и укомплектованность в арктических районах Республики Саха (Якутия)

Районы / Districts	Врачи / Doctors				Средний медперсонал / Medical nurses			
	Штатные, единицы / Staff, units	Физические лица, чел. / Individuals, number	Укомплектованность, % / Staffing,%	Обеспеченность на 10 000 нас. / Availability per 10,000 pop	Штатные, единицы / Staff, units	Физические лица, чел. / Individuals, number	Укомплектованность, % / Staffing, %	Обеспеченность на 10 000 нас. / Availability per 10,000 pop
Абыйский / Abyysky/	29	15	51,7	37,7	72	64	88,9	160,8
Аллаиховский / Allaikhovsky	22	11	50,0	40,6	48,5	34	70,1	125,6
Анабарский / Anabarsky	18,75	9	48,0	25,0	38,5	30	77,9	83,4
Булунский / Bulunsky	56,25	26	46,2	31,2	141	79	56,0	94,7
Верхнеколымский / Verkhnekolymsky	27,5	15	54,5	37,0	65,25	39	59,8	96,3
Верхоянский / Verkhoyansky	61,5	37	60,2	33,2	209,25	155	74,1	139,2
Жиганский / Zhigansky	26,5	22	83,0	52,7	58,5	46	78,6	110,1
Момский / Momsky	22	16	72,7	40,3	70,5	58	82,3	146,0
Нижнеколымский / Nizhnekolymsky	35,25	19	53,9	44,3	97,5	50	51,3	116,6
Оленекский / Oleneksky	28,5	24	84,2	57,9	61,5	52	84,6	125,4
Среднеколымский / Srednekolymsky	47,25	31	65,6	41,8	117,25	100	85,3	134,7
Усть-Янский / Ustyansky	59,25	34	57,4	48,4	153	81	52,9	115,3
Эв.-Бытантайский / Ev.-Bytantaysky	14	9	64,3	31,8	33	31	93,9	109,7
Итого по АР / Total by AR	448	268	59,9	39,6	1165,75	819	70,3	121,0
Всего по РС (Я) / Total by RS (Y)	6489,5	4947	76,2	51,2	13 414,5	11 044	82,3	114,2

tively). The lowest staffing levels are in the Bulun and Anabar Districts (46.2 and 48% respectively).

There are opportunities for training medical personnel in RS (Y) on the basis of the Medical Institute of the M.K. Ammosov North-Eastern Federal University, as well as on the basis of five secondary professional organizations that train mid-level medical personnel. Thus, there is a great potential to ensure sufficient staffing levels. However, the issues of attracting and especially attaching personnel in the Arctic regions are very acute and require serious social and economic changes at the state level.

Taking into account low coverage of medical institutions in the Arctic, as well as climatic and geographical peculiarities (lack of permanent land and water communication), it is especially urgent, relevant and reasonable to use air ambulance on the vast territory of RS (Y) with its hard-to-reach areas. As shown in Table 4, 30.3% of air ambulance calls are made from the Arctic regions, and the ratio of air ambulance use per each resident of the Arctic regions of the Republic of Sakha (Yakutia) is 5:1 to residents of other regions.

In total, 804 sanitary missions were submitted in the Republic of Sakha (Yakutia) in 2021, and 1,511 patients were evacuated. Among them, 423 sanitary assignments were performed in Yakutsk city, 662 patients were evacuated (2020 — 241 sanitary assignments, 360 patients were evacuated), intra-district evacuations — 235 sanitary assignments, 528 patients were evacuated (2020 — 55 assignments, 98 patients), inter-district evacuations — 145 sanitary assignments, 320 patients were evacuated (2020 — 38 assignments, 45 patients) (Table 3).

The largest number of patients was evacuated from the Arctic group of districts/units — 459 patients (2020 — 141 patients).

In 2021, COVID-19 took the first place in the specific weight of all diseases which required medical evacuation in the Republic of Sakha (Yakutia). Compared to 2020, the number of evacuated patients in 2021 has increased 3 times — 1511 patients (2020 — 503 patients).

On average, air ambulance service indicator is 5 times higher in the Arctic regions than in the Republic. The highest indicators of air ambulance service to the population are observed in the following districts Abyisky, Bulunsky, Verkhoyansky, Nizhnekolymsky, Oleneksky, Srednekolymsky, Eveno-Bytantaysky (Table 4).

Table 3

Dynamics of the number of sanitary tasks and evacuated patients by groups of districts/uluses of the Republic of Sakha (Yakutia)

Таблица 3

Динамика количества санитарных заданий и эвакуированных больных по группам районов/улусов Республики Саха (Якутия)

№	Группа районов / Group of districts	2020 г.		2021 г.	
		Количество санитарных заданий / Number of san.tasks	Количество больных / Number of patients	Количество санитарных заданий / Number of san.tasks	Количество больных / Number of patients
1	Арктическая группа / Arctic group	81	141	230	459
2	Северная группа / Northern group	22	25	51	117
3	Юго-Западная группа / South-West group	63	98	144	232
4	Заречная группа / Zarechnaya group	82	121	165	246
5	Вилюйская группа / Viluyskaya group	73	91	198	437
6	Центральная группа / Central group	15	27	16	20
	ИТОГО / TOTAL	336	503	804	1511

Table 4

Dynamics of the indicator of air ambulance service for the population of the Arctic regions of the Republic of Sakha (Yakutia) (number of calls for sanitation per 1000 population)

Таблица 4

Динамика показателя обслуживания санитарной авиацией населения арктических районов Республики Саха (Якутия) (число вызовов санавиации на 1000 населения)

Районы / Districts	Годы / Year					
	2000	2005	2010	2015	2020	2021
Абыйский / Abyysky/	5,5	7,1	3,7	6,3	7,6	11,3
Аллаиховский / Allaikhovsky	6,8	11,4	4,0	3,7	5,6	9,7
Анабарский / Anabarsky	0,8	5,4	4,8	5,9	5,5	3,6
Булунский / Bulunsky	0,7	8,9	10,2	9,8	7,9	12,8
Верхнеколымский / Verkhnekolymsky	0,9	3,3	4,7	8,9	3,5	5,6
Верхоянский / Verkhoyansky	1,2	9,0	6,8	7,9	10,0	14,2
Жиганский / Zhigansky	8,1	5,2	2,2	1,6	2,9	2,4
Момский / Momsky	1,7	4,3	4,0	5,5	6,3	9,0
Нижнеколымский / Nizhnekolymsky	1,7	2,9	3,8	5,0	6,3	11,5
Оленекский / Oleneksky	3,5	2,7	4,2	9,1	10,8	17,1
Среднеколымский / Srednekolymsky	2,1	10,5	13,1	8,4	9,1	13,3
Усть-Янский / Ustyansky	0,7	9,2	5,1	7,6	9,3	8,1
Эв.-Бытантайский / Ev.-Bytantaysky	2,8	7,9	12,2	9,0	5,6	12,5
Итого по АР / Total by AR	2,8	6,7	6,1	6,8	6,9	10,08
Всего по РС (Я) / Total by RS (Y)	1,5	1,5	1,4	1,6	1,9	2,4

CONCLUSION

The problem of providing medical care to the population in the regions of the Arctic zone of the Russian Federation acquires special significance. Development of the Arctic territories and industrial activity make their contribution to the process. The analysis of medical service indicators in the Arctic regions of the Republic of Sakha (Yakutia) has shown following positive features: there are areas with positive dynamics in population growth; there are areas with sufficiently high indicators of medical personnel availability; there is a high need for air ambulance. Year after year, there are districts where these indicators are higher than average for the Republic of Sakha (Yakutia) and for the Arctic regions in particular. The overall picture is quite unstable, and the share of districts with negative population dynamics and low availability of medical personnel is also high, which requires extraordinary solutions. Accordingly, the Republic of Sakha (Yakutia) has elaborated a program for the development of Arctic medicine. This program includes several areas: first of all, the creation and development of the Republican Center for Mobile Brigades to provide specialized medical care; the training of qualified medical personnel, their distribution and retention in the field; and the widespread use of air ambulance and information technologies, including telemedicine.

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ADDITIONAL INFORMATION

Author contribution. Thereby, all authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

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