

N.A. Ilyina, S.S. Sleptsova, S.S. Sleptsov

EPIDEMIOLOGICAL CHARACTERISTICS OF THE NOVEL CORONAVIRUS INFECTION COVID-19 IN THE REPUBLIC OF SAKHA (YAKUTIA) FOR 2020-2021

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Introduction. The first confirmed case of COVID-19 in the Republic of Sakha (Yakutia) was registered on March 18, 2020, and in June the regional incidence rate reached 267.7 people/100,000 population, which was significantly higher than the national average.

Objective. Conduct an analysis of the epidemiological situation of the incidence of a new coronavirus infection (NCVI) in the RS (Y) for 2020-2021.

Materials and methods. The work used data from official statistics of the Office of Rospotrebnadzor in the Republic of Sakha (Yakutia), FGUZ "Center for Hygiene and Epidemiology in the Republic of Sakha (Yakutia)" and Rosstat.

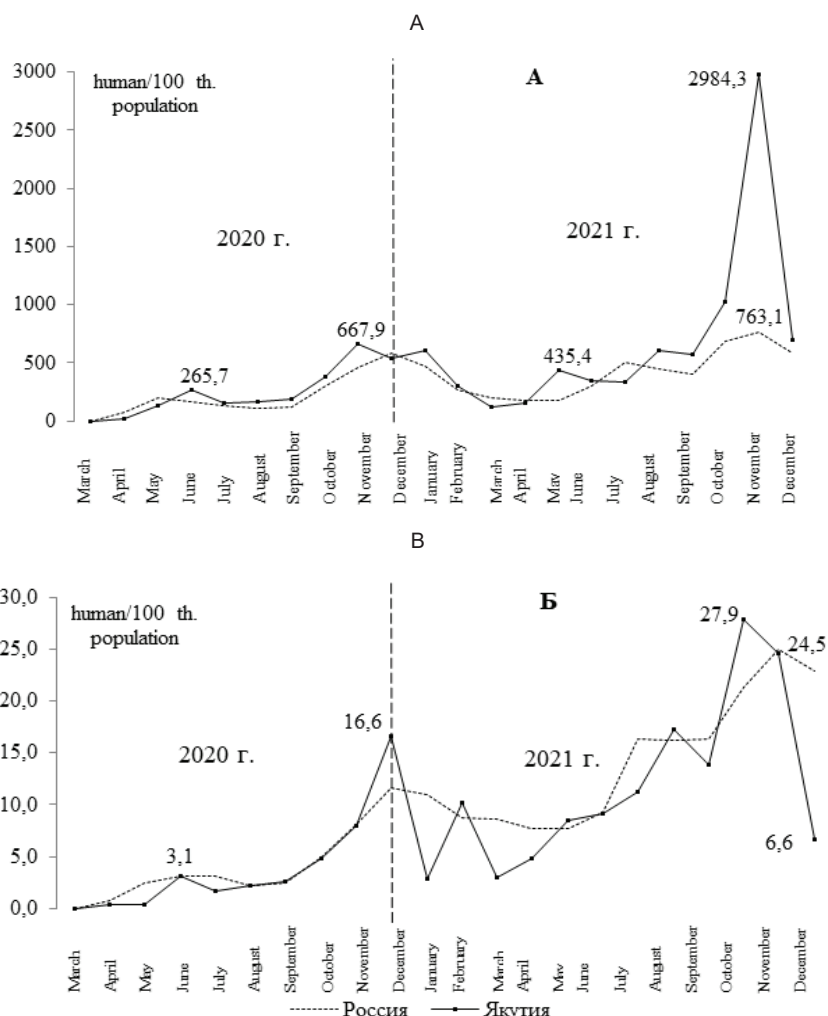
Results. Despite the regional peculiarities of the population of Yakutia, epidemic rises in the incidence of NCVI COVID-19 in the Republic of Sakha (Yakutia) corresponded to the periods of spread of the "Wuhan" strain of the virus in 2020 (2,531.0 people/100 thousand people) and the Indian strain "delta" in 2021 (8,196.9 people/100 thousand people), which was reflected in a 3.6-fold increase in the mortality rate in the Republic of Sakha (Yakutia) (from 39.0 to 141.8 people/100 thousand of us.). The incidence in the first year of the pandemic was directly related to the transport accessibility of certain territories of Yakutia and the implementation of anti-epidemic measures. The incidence of COVID-19 in all territories in 2021 was significantly higher than in 2020.

Conclusion. Morbidity and mortality rates of NCVI for 2020-2021 comparable with periods of rising morbidity and mortality in Russia.

Keywords: COVID-19, coronavirus pandemic, Yakutia, morbidity, mortality, epidemic rises.

Introduction. The new coronavirus infection COVID-19, caused by the SARS-CoV-2 virus and registered for the first time in China at the end of 2019, has spread unprecedentedly rapidly throughout the world, including Russia [1, 6, 8]. So, despite the introduction by the state of a number of preventive and anti-epidemic measures, already in the first half of 2020, this disease was noted in all regions of the country, even the most remote ones. The Republic of Sakha (Yakutia) was no exception - the first confirmed case of COVID-19 was registered on March 18, 2020. As of May 13, 2020, 652 cases of NCVI were registered in the republic, of which 452 people were infected. were on inpatient treatment, 147 people. recovered, 4 patients died. Cases of the disease have been reported in Yakutsk, Neryungri, Aldan, Suntar, Lensky, Vilyuysky, Gornyy, Mirny, Oymyakonsky,

ILYINA Natalina Alexandrovna – postgraduate student of the Department of Infectious Diseases, Phthisiology and Dermatovenereology, e-mail: bnatalinush@mail.ru, ORCID 0000-0002-9458-403x; **SLEPTSOVA Snezhana Spiridonovna** – MD, associate professor, Head of the Department of Infectious Diseases, Phthisiology and Dermatovenereology, e-mail: sssleptsova@yandex.ru, ORCID 0000-0002-0103-4750; **SLEPTSOV Spiridon Spiridonovich** – PhD in Biology, associate professor, senior researcher, Laboratory of Clinical Population and Medical and Social Research, e-mail: sachaja@yandex.ru, ORCID 0000-0002-2482-2928



Morbidity rates (A) and mortality (B) from a new coronavirus infection in the Russian Federation and the Republic of Sakha (Yakutia) by months, 2020-2021 [2, 3]

Khangalassky, Ust-Yansky and Megino-Kangalassky districts [7]. In June of the same year, the regional incidence rate reached 267.7 people/100,000 people, which was significantly higher than the national average. Of course, at first, one of the factors in the widespread spread of the infection was both the underestimation of the danger of a new infection by a significant part of the population (and often against the backdrop of the so-called infodemic), and the insufficient preparedness of the health care system for the emergence of such an unexpected epidemic scenario.

Objective. To analyze the epidemiological situation of the incidence of a new coronavirus infection in the Republic of Sakha (Yakutia) for 2020-2021.

Materials and research methods. The work used data from official statistics of the Office of Rospotrebnadzor in the Republic of Sakha (Yakutia), FGUZ "Center for Hygiene and Epidemiology in the Republic of Sakha (Yakutia)" and Rosstat. To study the features of the spread of the pandemic across the region, the medical-geographical zoning of Yakutia was used [4], according to which it is conditionally divided into 6 zones:

1. Polar zone - consists of 13 regions of Yakutia included in the Arctic zone of Russia. It is characterized by extreme natural and climatic conditions, considerable remoteness from industrial centers, transport isolation. The population density is 0.04 people/km², as of January 1, 2021, 67.7 thousand people live.

2. Eastern Yakutia - includes 3 regions of Yakutia, including the Oymyakonsky ulus, known as the cold pole of the Northern Hemisphere. Population density - 0.09 people / km², 27.7 thousand people live. A significant part of the population is represented by visiting citizens employed in the mining industry.

3. Western Yakutia (Vilyui group of regions) - the zone includes agricultural regions, the climate is sharply continental, but relatively mild. Population density - 0.05 people / km², 93.7 thousand people live.

4. Southern (Verkhnelenskaya) zone - occupies the southern part of the territory of the republic, the climate is milder than in the rest of Yakutia. Population density - 0.03 people / km², 60.8 thousand people live.

5. Central zone - characterized by a sharply continental climate. 188.6 thousand people live on the territory, of which more than 90% are the indigenous population (Yakuts).

6. The zone of large cities includes mainly residents of the cities of Yakutsk,

Table 1

COVID-19 incidence rates by medical-geographical zones of the Republic of Sakha (Yakutia)

№	Район	Incidence rate					
		2020 г.			2021 г.		
		abs., human.	share, %	human /100 th. population	abs., human.	share, %	human./100 th. population
1	Abyi	24	0.09	607.7	66	0.08	1685.4
	Anabar	88	0.36	2409.0	29	0.04	789.8
	Allaikhovsky	161	0.66	5969.6	196	0.25	7190.0
	Bulunskiy	73	0.29	857.5	426	0.54	5011.2
	Nizhnekolymsky	37	0.15	868.5	285	0.36	6740.8
	Verkhoyansk	212	0.86	1917.0	640	0.81	5824.0
	Upper Kolyma	23	0.09	574.6	262	0.33	6576.3
	Zhigansk	212	0.87	5155.6	601	0.76	14381.4
	Momsy	55	0.23	1384.0	199	0.25	4912.4
	Ust-Yansky	76	0.31	1084.5	165	0.21	2345.4
	Eveno-Bytantaisky	1	0.00	35.1	167	0.21	5800.6
	Oleneksky	191	0.78	4497.3	558	0.70	12898.8
	Srednekolymsky	80	0.33	1091.1	361	0.45	4937.1
	Total by zone	1233	5.04	1822.6	3955	4.98	5833.5
2	Oymyakonsky	222	0.91	2818.3	788	0.99	10030.5
	Tomponsky	116	0.47	926.1	850	1.07	6755.1
	Ust-Maisky	103	0.42	1377.7	405	0.51	5576.2
	Total by zone	441	1.80	1581.8	2043	2.57	7374.9
3	Verkhnevilyuisk	334	1.37	1589.0	762	0.96	3597.7
	Vilyuysky	408	1.67	1633.2	2033	2.56	8097.3
	Nyurbinsky	411	1.68	1740.6	1084	1.36	4565.6
	suntarsky	286	1.17	1221.0	1416	1.78	5979.7
	Total by zone	1439	5.89	1546.7	5295	6.66	5650.4
4	Lensky	398	1.63	1095.4	1275	1.60	3496.9
	Olekminsky	274	1.12	1118.8	1159	1.46	4751.6
	Total by zone	672	2.75	1104.8	2434	3.06	3999.8
5	Amginsky	352	1.44	2096.0	1471	1.85	8727.4
	Mountain	324	1.33	2677.0	572	0.72	4664.1
	Kobyaisky	164	0.67	1351.0	680	0.86	5631.5
	Namsky	440	1.80	1768.1	1803	2.27	7185.0
	Megino-Kangalassky	840	3.43	2718.0	3574	4.50	11382.9
	Tattinsky	330	1.35	2038.7	1357	1.71	8340.0
	Ust-Aldan	342	1.40	1671.3	1836	2.31	8949.5
	Khangalassky	330	1.35	1004.8	4562	5.74	13815.5
	Churapchinsky	280	1.15	1333.3	1160	1.46	5495.8
	Total by zone	3402	13.92	1816.2	17015	21.41	9021.7
6	Aldan	895	3.66	2286.1	3523	4.43	9076.2
	Mirninsky	853	3.49	1181.4	5790	7.28	8053.1
	Neryungri	743	3.04	1005.1	3087	3.88	4121.4
	Yakutsk	14 763	60.40	4217.8	36327	45.71	10155.9
	Total by zone	17254	70.59	3223.3	48727	61.31	8968.6
Total		24441	100	2514.5	79469	100	8092.8

Designation of zones: 1 - Zapolyarnaya; 2 - East; 3 - Western; 4 - South (Verkhnelenskaya); 5 - Central; 6 - zone of large cities.

Mirny, Neryungri and Aldan, in which more than half (543.3 thousand people) of the total population of Yakutia (981.9 thousand people) live.

Results.

The Republic of Sakha (Yakutia) is located in the northeastern part of the Russian Federation and is part of the Far Eastern Federal District. Decree of the Government of the Republic of Sakha (Yakutia) dated December 23, 2021 No. 536 "On the differentiation of settlements of the Republic of Sakha (Yakutia) by transport accessibility and remoteness to ensure the livelihoods of the population" 15 settlements of the republic are defined as limited access, 100 - remote, 208 - hard to reach. Therefore, when organizing medical care in Yakutia, regional features are always taken into account: low population density, significant distances between settlements (in some areas, the service radius of medical organizations is more than 500 km²), a weak transport

scheme between settlements, and the absence of regular transport links.

Dynamics of the incidence of COVID-19 in Yakutia in 2020-2021 characterized by periods of rise and fall of varying duration. In 2020, the average annual NCVI was 2,514.5 people/100,000 people. (24,441 cases), in 2021 - 8,092.8 people/100 thousand people. (79,469 cases). In general, epidemic rises in incidence for 2020-2021 in the Russian Federation and the Republic of Sakha (Yakutia) corresponded to the periods of spread of the "Wuhan" virus strain in 2020 and the Indian "delta" strain in 2021 [2, 3, 5].

The spread of a new coronavirus infection in the Republic of Sakha (Yakutia) at first occurred due to imported cases from disadvantaged territories of the Russian Federation and from abroad (Switzerland, England, USA). By the end of 2020, the incidence of COVID-19 in the republic tended to increase, and from the

beginning of 2021, to decrease, which in April was again replaced by high rates of its growth [5].

In the first half of 2020, the highest incidence rate in Yakutia was observed in May (1,284 people), in the second half of the year, a pronounced increase in the incidence began in autumn, followed by a peak in November (6,450 people). The beginning of 2021 was also characterized by a significant number of cases (5,879 cases in January). In early spring (February-March), a slight decrease in the incidence rate was noted, but since April there has been another rise with a peak in November (28,933 cases). As a rule, at the same time, a peak in mortality was observed - in the period from 10/01/2021 to 11/31/2021, 515 people died, which accounted for 37.4% of the total annual number of deaths. In general, mortality in 2021 amounted to 141.8 people/100 thousand people, while a year earlier this figure was at the level of 39.0 people/100 thousand people. A similar dynamics of mortality was observed throughout the country, which is associated with the circulation of certain strains of COVID-19 in the period 2020-2021. (Fig. 1).

It can be seen from the data in Table 1 that during the observation period, the main number of cases was registered in the urban area - 70.6% in 2020 and 61.3% in 2021. It is obvious that a slight decrease in the proportion of cases in 2021 in the area of large cities is mainly due to a wider spread of the virus in rural areas, including due to foci of coronavirus infection that have arisen in Vilyuysky, Tattinsky, Amginsky, Oymyakonsky and Zhiganskyy uluses.

In the structure of the diseased persons aged 18 years and older accounted for 80.4-86.5%, while the largest proportion was in patients aged 30 to 49 years (33.1-33.5%). According to intensive indicators, the most affected were persons over 65 years of age. For example, in 2021, the incidence rate in this group was 12,769.3 people/100,000 people. (Table 2).

According to the patients themselves, a significant proportion of those infected were infected by family members (43.2% in 2020, 38.3% in 2021). There were also cases of infection at work (11.5% in 2020, 4.9% in 2021) and in medical institutions (28% in 2020, 1.1% in 2021). But more than half of the patients (51-54.9%) found it difficult to answer this question.

Regardless of the year, the vast majority of people with positive test results (n = 103,910) experienced asymptomatic or mild COVID-19 (68.7-69.6%), moderate severity was recorded in 27.2-27.7%

Table 2

Age composition of patients with a new coronavirus infection in the Republic of Sakha (Yakutia), 2020-2021

Age group	Years					
	2020			2021		
	human	%	human./100 th. population	human	%	human./100 th. population
Up to 1 year	196	0,8	1 444,7	983	1,2	7 571,4
1-6 years old	959	3,9	995,6	4 733	5,9	5 073,5
7-14 years old	1457	6,0	1 249,8	7 116	9,0	5 978,4
15-17 years old	676	2,8	1 792,0	2 764	3,5	7 119,1
Total up to 17 years	3288	13,5	1 244,5	6 3873	19,6	9 055,1
18-29 years old	3 497	14,3	2 173,6	10 397	13,1	5 332,0
30-49 years old	8 093	33,1	2 854,4	26 621	33,5	9 231,4
50-64 years old	5 805	23,8	3 250,9	16 179	20,4	9 128,9
65 years and older	3 756	15,4	4 784,8	10 676	13,4	12 769,3
Total 18 years and older	21 151	86,5	3 015,2	79 469	80,4	8 196,9
Total	24 441	100,0	2 531,0	15 596	100	5 904,8

Table 3

Distribution of people who died from a new coronavirus infection by age in the Republic of Sakha (Yakutia) for 2020-2021

Age group	Год					
	2020			2021		
	human	%	human./100 th. population	human	%	human./100 th. population
18-29 years old	0	0,0	0,0	3	0,2	1,5
30-49 years old	21	5,6	7,3	52	3,8	18,0
50-64 years old	91	24,1	51,3	335	24,4	189,0
65 years and older	266	70,4	318,2	985	71,6	1178,1
Bcero	378	100,0	39,0	1375	100,0	141,8

of patients. The infection was severely transferred in 2020 - 2.7%, in 2021 - 4% of patients. But at the same time, it must be pointed out that due to the increase in the incidence, the absolute number of moderate and severe COVID-19 patients increased from 7,141 people to in 2020 to 24,807 people in 2021. Of course, this not only increased the workload at all stages of medical care, but also essentially reflected in the number of deaths - from 387 cases (39.0 people / 100 thousand people) to 1375 people. (141.8 people/100 thousand people).

64.2% of the deceased had a pathology of the cardiovascular system (IHD, hypertension, angina pectoris), 12.4% had pathology of the respiratory organs (COPD, bronchial asthma), 24.2% had diseases of the endocrine system (diabetes mellitus), oncological diseases were noted in 6.9%, HIV infection in 0.1%. More than 90% of the dead are people aged 50 and older (Table 3).

At the end of 2020, mass vaccination against COVID-19 began. As of December 31, 2021, 526,006 people were vaccinated for the first time in the region. (including 106,027 people over 60), the second vaccination - 493,018 people, i.e. 99,271 people completed the full course of immunization. In total, 90,630 people were revaccinated in the Republic of Sakha (Yakutia).

Conclusion. Dynamics of the inci-

dence of COVID-19 in the Republic of Sakha (Yakutia) in the period 2020-2021 was characterized by periods of rise and fall of various durations, epidemic rises corresponded to the periods of spread of the "Wuhan" strain of the virus in 2020 (2,531.0 people / 100 thousand people) and the Indian strain "delta" in 2021 (8,196, 9 people/100 thousand people). This was reflected in a 3.6-fold increase in the regional mortality rate from 39.0 to 141.8 people/100,000 population, which also corresponds to the all-Russian indicators, including the dynamics of the incidence and mortality from COVID -19 by month.

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