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TOTAL DYNAMICS OF CHILD MORTALITY RATES IN THE REPUBLIC OF SAKHA (YAKUTIA) FOR THE PERIOD 2006-2015

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ABSTRACT

The article provides a retrospective analysis of child mortality in the Republic of Sakha (Yakutia) for the period 2006-2015. According to the analysis, there is an evolution of child mortality rates, a steady trend towards a decrease in child mortality rates for many groups of diseases, the presence of gender differences in the structure of child mortality, high child mortality rates in the Arctic regions of the Republic of Sakha (Yakutia).

Insertion of high-tech methods of medical care, input of pediatric and prenatal centers played a huge role for decreasing child mortality rate. Especially it is up-to-date issue in the conditions of the Arctic region, where children's destinies are sometimes resolved by long distance and possibility of ambulance aircraft. Sufficiently huge number of child and adolescent mortality in RS (Y), due to external causes, makes social component of loss. Thus, in the modern stage of development of the Republic of Sakha (Yakutia) the peculiarities of child mortality include, at first, huge demographic significance, at the second-dependence on social life conditions. Because child health is a social category, child mortality rate and structure are integral criterions of population life quality rating and the quality of medical care in the region.

Keywords: children, mortality rate, Republic of Sakha (Yakutia), Arctic, injuries and poisoning, external causes.

Introduction. Children's and adolescents' health care and its' preservation is one of the main state problems, solving of it provides presence of work force and defensive potential of a country. Convention on the Rights of the Child, which is undertaken almost in all countries of the world, involves realization of wide range of legislative, administrative and other measures for serving of the interests of children, first of all, of their health care. The problems of health preservation, decrease of death rate and children's disability were declared as priority directions by the President of the Russian Federation [2, 3]. The problem of child mortality assumes an up-to-date importance [1].

Nowadays, it is evident, that the fact of medical care is not the only issue in the strategy of national development that is responsible for healthcare, because the main reasons, determining children's ill-being, refer also to social and economic spheres.

The **aim** of the study was to present the evolution of child mortality rates for the period 2006-2015 in the Republic of Sakha (Yakutia).

Materials and methods. We analyzed child mortality rate by all disease structure, according to the data of the official statistics of Yakut Republican Medical informative-analytic center for the period 2006-2015.

Results. Nowadays the decreasing of child mortality rate is one of the main issues of the demographic development in the Republic of Sakha (Yakutia)**.** For the period 2006-2015 common child mortality rate had decreased. Thus, in 2006 it was 1,5 %, in 2006 and at the beginning of 2015 reached a historic low of 0,7 %.

Mortality rates of male children had increased in dynamics: in 2006 - 61%, in 2015 -59% (Table 2).

Primary analysis of mortality's age-specific structure within 10 years had found out sustained tendency of child mortality's decrease in all ages group. The Table 3 shows the significant changes in the structure of total child mortality since 2006, thus, the ratio of child mortality of 0-1 ages had decreased, the mortality rates of 15-17 ages' children were stable, and we noted the tendency of increasing child mortality of 1-4,5-9,10-14 ages (Table 3).

According to the data, in 2006 we could find in the structure of 412 total child mortalities the following disease classes: perinatal causes are prevailed (154 incidents), then consequences of external causes (137), and on the third place-congenital malformations,deformations and chromosomal abnormalities (56).

In 2015 the structure of 194 total

Table 1

Child mortality in the Republic of Sakha (Yakutia) for the period 2006-2015

Rate	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total children's death 0-17 years	412	387	361	280	232	206	220	220	217	194
Mid-year child population 0 -17 years	261.6	265.2	259.0	251.6	250.6	252.9	253.7	254.9	256.9	259.6
Child mortality rate per 1.000 children	1.5	1.4	1.3	1.1	0.9	0.8	0.8	0.8	0.8	0.7

Table 2

Gender differences of child mortality in the Republic of Sakha (Yakutia)

Years	Boys	Girls
2006	254 (61,65)	158 (38,35)
2007	244 (63,05)	143 (36,95)
2008	209 (57,89)	152 (42,11)
2009	160 (57,14)	120 (42,86)
2010	136 (58,62)	96 (41,38)
2011	132 (64,08)	74 (35,92)
2012	140 (63,64)	80 (36,36)
2013	148 (67,27)	72 (32,73)
2014	133 (61,29)	84 (38,71)
2015	116 (59,79)	78 (40,21)

Table 3

Age pattern of child mortality in 2006-2015. %

Year	0-1 year	1-4 years	5-9 years	10-14 years	15-17 years
2006	53.64	13.83	8.50	9.47	14.56
2007	55.81	14.73	7.75	7.75	13.95
2008	57.89	13.57	5.82	5.82	16.90
2009	38.57	13.93	11.79	12.86	22.86
2010	34.48	15.95	13.79	12.07	23.71
2011	36.89	14.08	8.74	11.17	29.13
2012	38.64	22.27	11.82	12.73	14.55
2013	41.82	15.45	11.82	15.00	15.91
2014	39.17	15.21	9.68	12.44	23.50
2015	39.18	17.53	15.46	13.40	14.43

Table 4

Infant mortality rate dynamics in 2006-2015 per 1000 child population

	Total	Certain infectious and parasitic diseases	Neoplasms	Dis eases of the blood and blood-forming organs	Endocrine diseases	Diseases of the nervous system	Diseases of the circulatory system	Diseases of the respiratory system	Diseases of the digestive system	Diseases in the perinatal period	Congenital malformations	Symptoms.signs.and abnormalclinical and laboratory findings	Injury and poisoning	Consequences of external causes	Diseases of the genitourinary system	Diseases of the skin and subcutaneous system	Diseases of the musculoskeletal system and connective tissue
2006	1.535	0.030	0.048	…	0.019	0.034	0.019	0.045	0.019	0.574	0.209	0.030	…	0.510	…	…	…
2007	1.472	0.015	0.027	0.004	0.011	0.065	0.030	0.068	0.004	0.487	0.183	0.095	…	0.475	0.008	…	…
2008	1.399	0.015	0.023	…	…	0.054	0.008	0.054	0.004	0.496	0.221	0.043	…	0.473	0.004	0.004	…
2009	1.101	0.024	0.020	0.004	0.008	0.063	0.075	0.055	0.008	0.114	0.083	0.122	0.499	0.016	0.004	…	0.008
2010	0.918	0.028	0.028	0.008	…	0.087	0.055	0.055	0.008	0.047	0.044	0.071	0.479	0.004	…	…	0.004
2011	0.815	0.012	0.032	0.008	0.004	0.063	0.059	0.040	0.012	0.071	0.059	0.055	0.395	0.004	…	…	…
2012	0.867	0.016	0.004	0.008	0.004	0.083	0.059	0.051	0.020	0.067	0.075	0.067	0.406	…	0.008	…	…
2013	0.863	0.016	0.012	0.008	0.004	0.125	0.078	0.039	0.004	0.094	0.024	0.098	0.345	0.012	0.004	…	…
2014	0.844	0.012	0.016	…	0.004	0.078	0.121	0.070	0.008	0.125	0.027	0.047	0.339	…	…	…	…
2015	0.747	0.019	…	…	…	0.108	0.058	0.062	0.023	0.081	0.019	0.039	0.339	…	…	…	…

child mortalities included following disease classes: at first -injury and poisoning (88 incidents), on the second place-diseases of the nervous system (28), then perinatal causes (21).

The total child mortality rate decreased in 2015 from 1,535 to 0,747 per 1000 children (Table 4). In 2006 the most significant increase was found in the following disease classes,such as diseases in the perinatal period, consequences of external causes and congenital malformations.In 2015 we noted the greatest increase for such disease classes,like injury and poisoning, diseases of the nervous system, diseases in the perinatal period. Thus, there is an evolution of child mortality rates, connected with many factors of society development and health-care system.

There is the highest mortality rate in the Arctic region of the Republic of Sakha (Yakutia) (Table 5).

Table 5

Infant mortality rate dynamics in 2006-2015 per 1000 child population according to the regions of RS (Ya)

Region	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Yakutsk	1.320	1.070	1.179	0.797	0.650	0.571	0.567	0.750	0.781	0.734
Arctic	2.486	2.114	2.000	1.588	1.754	2.222	1.647	1.607	1.257	1.024
Industrial	1.356	1.317	1.115	0.854	0.842	0.581	0.796	0.553	0.806	0.698
Agrarian	1.598	1.815	1.639	1.302	1.065	0.943	1.014	1.093	0.742	0.750
Mixed zone	1.657	1.472	1.524	1.494	0.817	0.691	0.900	0.709	1.119	0.714
Total	1.535	1.472	1.399	1.101	0.918	0.815	0.867	0.863	0.844	0.747

Conclusion: According to the analysis of child mortality rates in the RS (Ya) there is an evolution of many groups of diseases. As a whole, child mortality rate has clearly decreased following the common pattern [3- 5]. In fact all differences in the structure of child mortality show real innovations and daily hard work of republican pediatric care.

Insertion of high-tech methods of medical care, input of pediatric and prenatal centers played a huge role for decreasing child mortality rate. Especially it is up-to-date issue in the conditions of the Arctic region, where children's destinies are sometimes resolved by long distance and possibility of ambulance aircraft. Sufficiently huge number of child and adolescent mortality in RS (Y), due to external causes, makes social component of loss. Thus, in the modern stage of development of the Republic of Sakha (Yakutia) the peculiarities of child mortality include, at first, huge demographic significance, at the second-dependence on social life conditions. Because child health is a social category, child mortality rate and structure are integral criterions of population life quality rating and the quality of medical care in the region.

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RISK FACTORS FOR THE DEVELOPMENT OF METABOLIC SYNDROME AMONG EMPLOYEES OF RIVER TRANSPORT OF YAKUTIA

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ABSTRACT

221 employees of river transport of Yakutia at the age 20-49 years old were examined simultaneously. Metabolic syndrome (MS) was verified in 7.7% of employees of non-indigenous nationality.

One of the most significant risk factor for MS was the age (F = 8.24, p = 0.005), 58.8% of people with MS belong to the age group from 40 to 49 years old. A sign of disadaptation of an organism - metabolic disorder was observed among people with the experience of 10 and more years. The degree of disorder of metabolic processes is mostly noticed among employees of non-indigenous nationality with an experience of residence in Yakutia of 15-20 years. Revealed age, severe arterial hypertension and the degree of dyslipidemia among river transport employees with MS in comparison with the population with MS indicate the acceleration of mechanisms of metabolic disorder in Yakutia.

Keywords: metabolic syndrome, river transport, Yakutia.

Introduction. WHO experts described the metabolic syndrome (MS) as a «pandemic of 21st century". Prevalence of MS is 20-40%. It is more common among middle-aged and older people (30-40%). Cardiovascular morbidity and mortality among people with MS are significantly higher than among those without MS. The presence of MS in 3-6 times increases the risk of developing both 2 type of diabetes and hypertension. MS is associated with a subclinical lesion of vital organs. MS is characterized by an increase of visceral fat, a decrease in the sensitivity of peripheral tissues to insulin and hyperinsulinemia, which cause the development of violations of carbohydrate, lipid, purine metabolism and arterial hypertension [8].

As in conditions of the Far North discomfort factors act continuously, depleting the adaptive reserves of the body, the risk of developing metabolic disorder increases, it leads to the formation of pathology [4, 6]. The formation of a specific "polar metabolic type" [5] among northerners are postulated, which is characterized by a complex restructuring of the hormonal-metabolic profile, active use of lipid energy carriers, a decrease of carbohydrates as energy substrates and a change in the need for vitamins. It is shown that there are significant differences in metabolic processes among migrants unadapted to the North and natives of the North, which can manifest themselves in the specific features of migrants and natives [1].

The specific nature of the operation of the floating structure of river vessels has stringent requirements for the health of workers in the fleet. The shortcomings in the organization of the regimes of labor, life, food, habitation on ships, etc., have a significant effect on the morbidity of crews. The leading factors in this are the impact of occupational hazards - noise, vibration, high humidity, various climatic and geographical and meteorological factors. In addition, the employees of water transport have high psychoemotional load [13]. According to Petrova T.B. and co-authors [2] in addition to climatic and geographic factors, there are specific occupational and socio-environmental factors, which influence on the floating crew of the Northern water basin, which doubles the probability of disturbances in metabolic processes, especially carbohydrate and lipid metabolism, among ship specialists. Due to increasing age and work experience, the activity of cholesterol esterification decreases, imbalance of lipid transport system and carbohydrate metabolism is increased, more noticeable among seamen, river birds and fishermen. According to the comparative analysis of the main causes of mortality in the Republic of Sakha (Yakutia) at the working age of 2005-2011, it was shown that the former population died more often than indigenous people from diseases of the circulatory system, including acute myocardial infarction and malignant neoplasms. According to the results of studies conducted in the Republic of Sakha (Yakutia), the frequency of metabolic syndrome (MS) is higher in non-indigenous residents than in indigenous ones [9]. The intensification of the lipid metabolism necessary for adaptation to the climatic and geographic conditions of the North with insufficient replenishment of body reserves, can lead to pre-pathological changes in the body. Thus, the study of the characteristics of metabolic processes of the newcomers who are working in the water transport industry of Yakutia is an urgent task for the development of therapeutic and preventive measures for early detection of risk groups. **The aim** of this study was to estimate the features of metabolic syndrome among river transport workers of Yakutia, depending on the medical and social factors, ethnicity and length of stay.

Material and methods of investigation. During the planned medical examination, we examined 221 water transport workers of the Republic of Sakha (Yakutia) at the age of 20 to 49 years (mean age 35.03 ± 7.95 years) (men - 184, women - 37). There were 25 people of the indigenous nationality (Yakut people - 21, indigenous people of the North -