

EDITOR'S COLUMN



Dear colleagues!

The editorial staff of the Yakut Medical Journal is glad to welcome you to the pages of the next issue of the publication.

Every year the number of clinical studies in the field of medicine is increasing, the doctors of different specialties enrich their knowledge

base, enabling to improve the quality of treatment and the prognosis of patients with various pathologies. Everyone who constantly works with patients has to realize personal responsibility for his professional competence. The purpose of our journal is to inform doctors about the current achievements of medical science and practice, having stated it in the most interesting and accessible form of presentation.

It's good to be aware that the geography of the authors of the Yakut Medical Journal expands with each issue. In the new issue of the journal, the authors from different regions of Moscow, St. Petersburg, Ufa, Saratov, Ulan-Ude, Novosibirsk, Khabarovsk, Syktyvkar and Yakutsk present their articles of various clinical focuses. In particular, comparative data of mortality from diseases of the circulatory system are presented depending on the territorial and gender characteristics of the population

of the Republic Sakha (Yakutia), clinical manifestations of various pathologies in children and adolescents, women's health, genetic aspects of gastroduodenal diseases, diabetes mellitus type 2 and etc. are covered. The total cardiovascular risk in the indigenous population of the Arctic zone of Yakutia is estimated. In our permanent section «Clinical case» a propionic academia case is described. Also, dear readers, you can get acquainted with the scientific directions of the Medical Institute of the North-Eastern Federal University named after M.K. Ammosov.

In the section «Our Anniversaries» we honor the respected and dear to us the jubilees of the Academician of the RAS Yuri Petrovich Nikitin and the Doctor of Medical Sciences, Professor Pyotr Mikhailovich Ivanov.

Dear colleagues, I wish you a pleasant and informative reading, have a success in scientific and practical activities!

Director of the YSC CMP, MD A.N. Romanova

EDITORIAL

A.G. Egorova, T.M. Klimova, A.N. Romanova

TERRITORIAL AND GENDER DIFFERENCES IN CARDIOVASCULAR MORTALITY IN THE SAKHA (YAKUTIA) REPUBLIC

DOI 10.25789/YMJ.2018.63.01

ABSTRACT

Aim of the study was analysis of territorial and gender differences in cardiovascular mortality among the population of the Sakha (Yakutia) Republic.

Materials and Methods. We used the statistical data of the Yakut Republican Medical Information and Analytical Centre of the Ministry of Health and of the Federal State Statistics Service of the Republic of Sakha (Yakutia) for 2015 for the analysis. The standardised mortality rates were calculated on the basis of the "European Standard Population" (2013).

Results. In 2015 in Republic of Sakha (Yakutia) 3634 people aged 15 years and older died of cardiovascular diseases (ICD 10 codes - I10-I99). The standardised cardiovascular mortality rates of the population of 15 years and older were 1004.8 (95% CI 972-1038) per 100,000 population, coronary heart disease (CHD) – 255.4 (95% CI 239- 272), cerebrovascular diseases – 113.2 (95% CI 102- 124), other heart diseases – 544.1 (95% CI 520- 568) respectively. The proportion of deaths from hypertensive diseases (I10-I15) in the mortality pattern from cardiovascular diseases (CVD) was 0.7%; CHD (coronary heart disease, I20-I25) – 24.5%; cerebrovascular diseases (I60-I69) – 11.5%; other heart diseases (I30-I52) – 55.4%. We have established substantial differences in the mortality rates and age of death from CVD between the municipalities of the republic. The highest standardised mortality rates from CVD were in Zhigansk, Olenyoksky, and Nizhnekolymsky districts (1931-2178 per 100 000 population), the lowest in Verkhnevilyuysky, Even-Bytantaisky, and Abyisky districts (498-605 per 100 000 population). The lowest median age values were observed in the Even-Bytantaisky and Abyisky districts (55 and 56 years respectively), the largest in the Olenyokskiy and Churapchinsky districts (77 and 75 years respectively).

Men's mortality rate was 1.7 times higher than that of women (1339 and 789 per 100 000 people, respectively, $p < 0.001$). Median age of death in men was 13 years less than in women (62 and 75 years, respectively, $p < 0.001$).

Conclusion. The results of the study indicate that there are significant differences between municipalities in CVD-related mortality rates. The mortality rate among men according to 2015 is 1.7 times higher than among women. To manage the demographic situation in the region, it is necessary to search for the causes of existing differences in the death rates of the population.

Keywords: mortality, cardiovascular disease, standardization indices, age of death, gender differences, Sakha (Yakutia) Republic.

Introduction

Cardiovascular diseases (CVD) remain the main cause of death in Republic of Sakha (Yakutia). The age-standardised mortality rates of the entire population of the republic from cardiovascular disease in 2015 amounted to 725,9 per 100 000 population (Russian Federation – 672.2 respectively). The proportion of CVD was 45,4% of all causes of death.

According to the administrative and territorial division, the territory of the Republic of Sakha (Yakutia) is divided into 34 districts (uluses) and 2 urban districts (Yakutsk and Zhatay). As of January 1st, 2015, the Republic's population was 956,896 persons. Settlement on Republic's vast territory causes differences in climatic, geographic, and environmental conditions of the habitat, socio-economic development, living standards, and in the age structure of the population.

Aim of the study is analysis of territorial and gender differences in cardiovascular mortality among the population of Republic of Sakha (Yakutia).

Materials and Methods of Research

Database used in the study originates in the Yakut Republican Medical Information and Analytical Centre of the Ministry of Health and also includes statistical data of Federal Agency of Territorial State Statistics Service for the Republic of Sakha (Yakutia) for 2015 [1]. The analysis was carried out by the cause of death codes I10-I99 – Diseases of the Circulatory System according to ICD-10: I10-15 – hypertensive diseases; I20-25- coronary heart disease (CHD); I 60-69 - Cerebrovascular diseases; I30-52 Other Heart Diseases.

The indicators of the two urban districts (Yakutsk and Zhatay) were combined and presented under the name of Yakutsk (City of Republican Status). To eliminate heterogeneity in the age structure of the population of the municipalities of the Republic, we used a direct standardisation method. Standardised death rates were calculated on the basis of European Standard Population, revised by Eurostat in 2012 and published in 2013 [2].

We conducted statistical analysis of the data using IBM SPSS Statistics 22 software. The age of death is presented as median (Me) and interquartile (25 and 75%) distribution in Me (Q1; Q3) format. When comparing independent groups, we used a nonparametric Mann-Whitney test or 95% confidence interval. Critical value of the level of statistical significance of the differences (p) was set at 5%.

Results and Discussion

In 2015, 3634 people aged 15 years

and over died in the Sakha (Yakutia) Republic from cardiovascular diseases (ICD 10 codes I10-I99). Of these, 2,085 were men and 1,549 were women. If we consider the structure of mortality from CVD, the proportion of deaths from hypertensive diseases (I10-15) was 0,7%; IHD (I20-25) – 24,5%; cerebrovascular diseases (I 60-69) – 11,5%; other heart diseases (I30-52) – 55,4%, other diseases – 7,6%.

Table 1 shows the mortality rates of the population of 15 years and older from cardiovascular diseases (ICD-10 codes I00-99) per 100,000 population. There are 5-fold differences in death rates between individual municipalities of the

Republic (224,6 and 1126 per 100,000 population, respectively). As you know, the general mortality rates depend on the characteristics of age (or any other) structure of the population. In this regard, there is a need to eliminate the influence of structural factors on its magnitude using an index method or methods for standardising coefficients.

We have identified significant discrepancies when analysing age structures of the population of municipal formations. For instance, the share of the population under the age of working age varied from 20 to 32,6%, and the proportion of people older than working age is from 9,7 to 21,5%.

Table 1

Mortality rates of the population of 15 years and older from cardiovascular diseases in 2015

Municipality	Population annual average number	Number of deaths	Per 100,000	Per 100,000*	Age of death, years**
Abyiskiy	3078	14	454,9	605,3	56 (41; 72)
Aldansky	32954	287	870,9	1420,6	67 (57; 78)
Tattinsky	11852	85	717,2	1463,3	73 (59; 82)
Allaaykhovskiy	2008	10	498,0	635,6	59 (40; 68)
Amginsky	11823	56	473,7	1024,9	70 (57; 78)
Anabarsky	2382	14	587,7	1390,7	61 (49; 78)
Bulunsky	6435	44	683,8	1388,1	60 (51; 70)
Verkhnevilyuysky	14691	33	224,6	498,0	61 (51; 75)
Verkhnekolymsky	3444	32	929,3	1306,0	63 (54; 74)
Verkhoyansky	8413	59	701,3	1138,2	61 (56; 69)
Viluysky	17820	138	774,4	1434,9	67 (56; 77)
Gornyy	8331	45	540,2	1211,3	69 (59; 84)
Zhiganskyy	3020	34	1126,0	2177,7	67 (60; 77)
Kobaiysky	9507	46	483,9	971,7	70 (57; 75)
Nyurbinsky	17323	99	571,5	1066,7	70 (58; 79)
Lensky	29711	193	649,6	1027,0	63 (53; 74)
Megino-Kangalassky	21842	128	586,0	1132,3	70 (58; 80)
Myrminsky	56329	217	385,2	978,4	62 (53; 75)
Momsky	2873	24	835,4	1414,7	68 (58; 76)
Namsky	17259	70	405,6	914,9	70 (59; 81)
Nizhnekolymskiy	3253	36	1106,8	1931,8	65 (57; 78)
Oymyakonsky	7365	65	882,6	1369,4	61 (51; 70)
Olekminsky	19703	131	664,9	1342,5	72 (61; 80)
Oleneksky	2769	22	794,7	1954,1	77 (67; 85)
Khangalassky	24890	104	417,8	763,2	67 (56; 78)
Srednekolymsky	5440	29	533,1	834,7	67 (51; 83)
Suntarsky	16895	87	515,0	846,9	68 (56; 77)
Tomponsky	10351	64	618,3	1247,8	68 (61; 77)
Ust-Aldansky	14986	60	400,4	766,4	67 (58; 79)
Ust-Maysky	5836	42	719,7	789,5	57 (51; 67)
Ust-Yanskiy	5512	45	816,5	1452,4	62 (52; 71)
Churapchinsky	14706	87	591,6	1483,2	75 (57; 82)
Even-Bytantaisky	2022	8	395,7	562,0	55 (48; 67)
Yakutsk	258988	927	357,9	814,9	70 (58; 81)
Neryungriysky	61958	299	482,6	961,2	63 (56; 75)
Republic of Sakha (Yakutia)	735760	3634	493,9	1004,8	67 (56; 78)

Note: * – mortality rates, standardized by European Population Standard structure (2013); ** – data presented in Me (Q1; Q3).

Calculation of the standardized mortality indicators for the European population showed a change in the regional positions in mortality rating. In 21 of 35 municipalities, death rates exceeded the value of 1000 per 100,000 population. The highest standardised mortality rates from CVD were in Zhigansky, Oleneksky, Nizhnekolymsky districts (1931-2178 per 100,000 population), the lowest in Verkhnevilyuysky, Even-Bytantaysky and Abyisky districts (498-605 per 100,000 population).

Medians of the age of death from CVD in municipalities also statistically significantly differed ($p < 0,001$). The lowest median age-of-death values were observed in the Even-Bytantaysky and Abyisky districts (55 and 56 years respectively), the largest in the Oleneksky and Churapchinsky districts (77 and 75 years, respectively).

The age-adjusted mortality rates of Republic's population of 15 years and older from CVD in 2015 were 1004,8 (95% CI 972- 1038) per 100,000 population; coronary heart disease (CHD) – 255,4 (95% CI 239- 272), cerebrovascular diseases – 113,2 (95% CI 102-124), other heart diseases – 544,1 (95% CI 520-568), respectively.

Due to the fact that the mortality of the male population, as a rule, exceeds the mortality in women, the mortality rates for each group were calculated separately (Table 2). Age structures of the male and female populations most significantly differed in the age groups 20-29, 60-69, 70 and older.

Comparison of men and women in terms of the age-standardised mortality rate per 100,000 population of the corresponding gender showed a statistically significant difference (Table 2). Thus, the mortality rate of men was 1,7 times higher than the death rate of women (1339 and 789 per 100,000 population, respectively, $p < 0,001$). The median age of death in men was 13 years less than in women (62 and 75 years, respectively, $p < 0,001$).

Analysis of age-specific mortality rates showed that the most significant differences in mortality between men and women were observed in the age groups of 30-59 years (Table 3).

At analyzing the age-standardized death rates from CHD and cerebrovascular diseases, we found that in all municipalities, except for the Verkhnevilyuysky district, the mortality rates of men were significantly higher than those of women (Table 4). At the same time, we identified areas with very high death rates from CHD and

Table 2

Age-adjusted mortality rates in 2015 per 100,000 population of the corresponding gender

ICD 10 code	Men (n=2085)	Women (n=1549)
I10-15 Hypertensive diseases	9,5 (95% CI 4-15)	6,0 (95% CI 2- 10)
I20-25 CHD	345,4(95% CI 316-375)	195,3 (95% CI 175-215)
I 60-69 Cerebrovascular diseases	145,9 (95% CI 127-164)	90,4 (95% CI 77-104)
I30-52 Other heart diseases	729,0 (95% CI 687-771)	426,6 (95% CI 398-455)
Other codes	109,1 (95% CI 91- 127)	70,2 (95% CI 58-82)
I10-I99 All codes	1338,8 (95% CI 1281-1396)	788,6 (95% CI 749- 828)
Age of death, years*	62 (Q153; Q373)	75 (Q163; Q182)

Note: 95% CI – 95% confidence interval; * – the data is represented in the format Me (Q1; Q3).

Table 3

Mortality rates per 100 000 population of the corresponding gender and age

Age group, years	I10-15 Hypertensive diseases	I20-25 CHD	I30-52 Other heart diseases	I 60-69 Cerebro-vascular diseases	Other codes	I10-I99 All codes
Men						
15-19	0,0	0,0	9,9	0,0	0,0	9,9
20-29	0,0	3,7	22,2	4,9	2,5	33,3
30-39	0,0	24,0	101,4	10,7	6,7	142,8
40-49	0,0	73,0	232,2	34,8	14,9	354,9
50-59	8,1	267,9	483,9	92,6	39,0	891,4
60-69	9,6	491,9	852,8	290,7	146,9	1791,9
70 and older	41,5	1310,7	2853,7	497,7	472,9	5176,5
15 and older	3,7	154,2	326,0	68,6	40,7	593,1
Women						
15-19	0,0	0,0	0,0	0,0	0,0	0,0
20-29	0,0	1,3	7,9	1,3	1,3	11,8
30-39	0,0	4,1	27,1	6,8	6,8	44,7
40-49	0,0	12,6	64,5	12,6	1,6	91,2
50-59	2,8	38,0	180,0	28,1	16,9	265,8
60-69	2,3	155,8	381,6	76,8	56,5	673,0
70 and older	31,4	989,6	1975,3	432,0	349,5	3777,9
15 and older	2,9	93,7	225,6	46,3	34,6	403,1

cerebrovascular diseases were identified.

Mortality rate for ICD 10 code Other heart diseases (I30-52) in 2015 was 55,4% (2013 cases) of all CVD-related deaths. The most frequent causes of death were heart failure (code I50) – 1223 cases, cardiomyopathy (code I42) – 439, heart failure (I46) – 278, respectively. In-depth analysis of the causes of death from cardiomyopathy (code I42) revealed that 138 cases of 439 (31,4%) were diagnosed with alcoholic cardiomyopathy (I42.6) as the cause of death, 102 (23%) – other cardiomyopathies (I42.8), in 162 (36,9%) – unspecified cardiomyopathy (I42.9). The highest death rates from

alcoholic cardiomyopathy were observed in Allaikhovsky, Verkhoyansky, and Ust-Yansky districts (table 4).

Proportion of deaths from alcoholic cardiomyopathy in the structure of death from CVD in men was statistically significantly higher than that in women (4.8 and 2.4%, respectively, $p < 0,001$). In both groups, the specific gravity of this cause of death was higher in employable age.

Conclusions

Results of the study indicate that there are significant differences between municipalities in the mortality rates from CVD. According to the data of 2015,

Table 4

Age-adjusted mortality rates in 2015 per 100,000 population of corresponding gender in context of municipalities

Municipality	CHD (I20-25)		Cerebrovascular diseases (I60-69)		Alcoholic cardiomyopathy (I42.6)		All codes (I10-I99)	
	men	women	men	women	men	women	men	women
Abyisky	0	0	0	46,7	0,0	0,0	809,4	502,3
Aldansky	982	637,6	307	173,8	126,8	16,9	1872,1	1110,5
Tattinsky	15,9	0	0	16,3	0,0	0,0	1745,1	1275,9
Allaahovsky	89	0	416,7	0	198,4	0,0	1511,7	97,1
Amginsky	64,2	42,5	24,8	26,6	0,0	0,0	1563	707,4
Anabarsky	0	0	0	0	93,1	0,0	1607,1	1277,1
Bulunsky	0	0	32,1	0	0,0	0,0	1582,3	1200,3
Verkhnevilyuysky	24	134,6	14,5	44,9	0,0	0,0	434,8	497,8
Verkhnekolymsky	287,4	0	345,7	196,7	0,0	0,0	1801,9	1062,1
Verkhoyansky	248,2	165,6	247,8	16,7	216,4	71,2	1534,5	842,8
Viluyusky	170,1	100,5	9,5	0	41,6	15,9	2023,1	1047,7
Gornyy	26,2	95,5	179,7	67,5	0,0	0,0	1601,4	951,4
Zhiganskiiy	0	147,5	0	0	0,0	0,0	3301,9	1648,5
Kobyaysky	0	97,2	126,6	48,6	38,2	0,0	1092,2	870,8
Nyurbinsky	0	0	0	0	0,0	10,3	1357	861
Lensky	478,5	169,3	359,6	167,3	109,4	41,6	1543,5	701,6
Megino-Kangalassky	961,3	386,8	148	107,3	34,1	0,0	1542,8	851,6
Myrinsky	849,3	541,4	155,7	117,2	51,0	8,2	1370,5	757,1
Momsky	0	231,5	72,2	115,7	0,0	0,0	1635,5	1214,6
Namsky	122,6	0	53,6	0	12,4	0,0	1347,2	634
Nizhnekolymskiy	0	0	48,6	0	0,0	0,0	2829,1	1386,9
Oymyakonsky	622,1	141,8	495,4	383,1	115,6	179,8	1629,6	946
Olekminsky	153,8	18,9	43,4	21	8,3	0,0	1940,4	1011,2
Oleneksky	0	0	0	0	0,0	0,0	2663,9	1548,2
Khangalassky	101,9	0	0	0	23,8	6,0	1009,4	588,5
Srednekolymsky	0	0	0	0	0,0	0,0	854,4	757,5
Suntarsky	623,2	279,2	203,8	62,4	21,8	0,0	1128,9	636,5
Tomponsky	0	39,8	0	0	0,0	0,0	1881,9	932,8
Ust-Aldansky	164,6	89,3	22	33	0,0	19,0	1199,8	474,3
Ust-Maysky	0	0	0	0	0,0	0,0	1316,7	431,1
Ust-Yanskiy	265,3	162,8	642,1	244,2	223,7	147,1	1689,6	1240,6
Churapchinsky	112,2	56	152,3	42	0,0	0,0	1518,6	1437,3
Even-Bytantskiy	0	0	0	0	0,0	0,0	1401	166,3
Yakutsk	265,5	156,3	153,6	92,4	20,6	6,1	1030,6	679,7
Neryungriskiy	659,4	367,8	187,7	231,7	12,2	0,0	1238,8	781,3
Republic of Sakha (Yakutia)	345,4	195,3	145,9	90,4	33,2	10,1	1338,8	788,6

the mortality rate of men was 1,7 times higher than that of women. In order to manage the demographic situation in the region, it is necessary to search for the causes of differences in the death rate of the population.

The work was carried out within the framework of research work "Contribution of Metabolic Syndrome to the Development of Coronary Artery Atherosclerosis in Yakutia's Population (M01; 05; 03)" (No. 0556-2014-0002).

References:

1. Baza dannyykh pokazateley minicipalnykh

obrazovaniy. Territorialny organ federalnoy sluzhby gosudarstvennoy statistiki po Respublike Sakha (Yakutiya) [Database of Indicators for Municipalities. Territorial Body of the Federal Service of State Statistics for the Republic of Sakha (Yakutia)]. URL: <http://www.gks.ru/dbscripts/munst/munst98/DBInet.cgi> (cited June 28th, 2018).

2. Revision of the European Standard Population. Report of Eurostat's task force. Publications Office of the European Union. 2013. 121 pp. [Online]. 2013 (cited June 10th, 2018). URL: <http://ec.europa.eu/eurostat/documents/3859598/5926869/KS-RA-13-028-EN.PDF/e713fa79-1add-44e8-b23d-5e8fa09b3f8f>

44e8-b23d-5e8fa09b3f8f

The authors:

1. Egorova Aitalina Grigorievna, PhD, Chief Researcher Yakut Science Centre of Complex Medical Problems, Yakutsk, Russia, e-mail: aitalina@mail.ru;
2. Klimova Tatiana Mikhailovna - Associate Professor of the Department of Pharmacology and Pharmacy of the Medical Institute NEFU; senior researcher of the YSC CMP, Yakutsk, Russia;
3. Romanova Anna Nikolaevna - MD, Director of the Yakut Science Centre of Complex Medical Problems, Yakutsk, Russia, e-mail: ranik@mail.ru.