ARCTIC MEDICINE

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REGIONAL CHARACTERISTICS OF POPULATION MORTALITY FROM EXTERNAL CAUSES IN THE REPUBLIC SAKHA (YAKUTIA)

Abstract. Mortality from external causes of death (accidents, poisonings, traumas, murders, suicides, etc.) is in second place in the structure of causes of death of population in the Russian Federation and in the Republic Sakha (Yakutia). Positive trends in the reduction of the absolute number of deaths, the proportion of these causes in the overall mortality were observed in the dynamics of mortality from external causes. However, mortality rates are not much changed in comparison with 90-s years of the last century.

The contribution of specific causes of external mortality in the overall mortality rate for this class of causes of death varies considerably. While reducing the share of road traffic deaths there increased contribution to such causes as suicide occurs, which raises serious concerns in terms of preservation of social well-being of the population.

Significant disparities persist across the gender. Index of high mortality of men for external causes of death is much more substantial than in general for all causes of death; and he does not disappear, but worse. The contribution of causes of death in the general mortality rate in men is more than 39%, whereas in women, only 26.9.

Excessive mortality from external causes remains a major feature of mortality of the working population. And at the end of 2015, the mortality rate from external causes exceeded death rate from diseases of the circulatory system. In territorial terms, the mortality from external causes in Northern and Arctic regions of the Republic is especially high.

The high mortality rate from accidental drowning is the specific feature of mortality by external causes in Yakutia; the largest gap with indicators for RF and DFO notes on the cause of death. In 2014, the mortality rate from accidental drowning was 3.24 times higher than in Russia.

A significant influence of external causes of death for the loss of the demographic potential should identify priority measures to reduce mortality from external causes in the hierarchy the goals and objectives of regional demographic policy. In measures aimed at reducing external mortality of paramount importance must be given not so much medical prevention, as in most measures of social prevention, which will be more effective in the decline of mortality from external causes.

Keywords: processes of mortality, external causes of death, high mortality of men, the Republic Sakha (Yakutia).

INTRODUCTION

The processes of population mortality are of key importance in ensuring the reproduction of demographic potential. As in other Northern subjects of the Russian Federation in the Republic Sakha (Yakutia), the situation with mortality of the population has a number of rather negative effects [4]. In the structure of the mortality causes mortality from external causes is on the second place after circulatory system diseases, identifying more than 17% of all population losses. This class covers quite a wide range of causes of death, including accidental poisoning, road traffic accidents, injuries, fires, accidents on manufacture, alcohol poisoning and other external influence.

Analysis of mortality from external causes is of particular interest because they can determine a significant reserve to reduce overall mortality. The specificity of mortality from injury and poisoning is their almost complete dependence on social factors. In addition, another characteristic feature – the high mortality of males and the high mortality rate of the working-age population.

The purpose of the study: analysis of regional features of the mortality from external causes in the Republic Sakha (Yakutia).

MATERIALS AND METHOD

In the analysis we used statistical data for 1990-2015 years in the number of the dead in total and from external causes of death, the coefficients of mortality in working age from different causes of death, the coefficients of mortality from external causes, the coefficients of mortality from individual causes of external death - murders, suicides, accidental drowning, injuries, poisoning, on high mortality index of men i.e. excess of men death rate over women mortality rate. We used the comparative data for the Far Eastern Federal District of the Russian Federation. The contribution of individual causes in the overall mortality rate from external causes was calculated.

THE RESULTS AND DISCUSSION

In 1965 external causes among the other mortality causes were at the first

Table 1

Dynamics of mortality from external causes in the Republic Sakha (Yakutia), per 100 thousand people

Gender	1990	2000	2005	2010	2011	2012	2013	2014	2015	2015/1990
Men	269,2	403,6	384,9	319,2	303,4	286	266,5	259,3	242,9	0,902
Women	58,5	89,5	80,7	78,2	66,9	62,9	60,4	56,7	53,1	0,908

Table 2

Dynamics of the number of deaths from external causes in the years 1990-2015, people

Indicator	1990	2000	2005	2010	2011	2012	2013	2014	2015	2015/1990
The number of deaths, in total	7470	9325	9696	9402	8992	8918	8351	8239	8165	1,09
Deaths from external causes	1836	2341	2186	1872	1740	1637	1533	1482	1392	0,76
Percentage in total number of deaths, %	24,58	25,10	22,55	19,91	19,35	18,36	18,36	17,99	17,05	0,69

place; this proportion remained until 1980, when these causes are moved to the 2nd place.

The positive dynamics continued in 1990-2015. The total number of deaths from external causes decreased almost at 24.2%, however mortality rates were not much changed compared to 1990 (Table 1).

The mortality rate from external causes of death for both men and women in general for 1990-2015 decreased from 164.4 to 145.3. Together with a decrease in the absolute number of deaths from external causes in 1990-2015 there is reduction in the share of them in the total number of the dead. After a peak in 2000 this indicator reduced by 2015 to 17.05% (Table 2). Though there are positive trends in mortality from external causes, it should be noted that, unfortunately, one can only speak about the return to the level of 1990-ies of the last century.

The same situation is characteristic and for Russia as a whole. At the same time these positive trends are not comparable with the situation in developed countries. "In the United States, a country with a population 2.2 times more than in Russia, and in 2012 external causes took away less lives (190 thousand vs 194 thousand in Russia)" [2].

Mortality from suicide and murder deserves more attention in the structure of external causes of death. These causes of death are predominant in the structure of the circumstances of violent deaths. Together in 2015 they gave 47% of the total number of deaths from external causes. Suicide

Table 3

The contribution of different causes to the overall mortality rate from external causes of death, %

	1990	1995	2000	2005	2010	2015
Murder	16,1	10,1	21,6	22,9	17,6	14,2
Suicide	14,7	13,6	19,8	21,0	20,9	23,9
Death by road accidents	20,7	8,9	7,5	9,6	7,4	8,9
Accidental alcohol poisoning	4,4	6,4	4,6	5,3	4,1	3,3

Table 4

Contribution of mortality from external causes in the overall rate of mortality for men and women, %

	2002	2005	2010	2011	2012	2013	2014	2014/2002
Men								
Russian Federation	38,7	34,1	30,2	29,4	29,9	29,9	29,9	0,771
Far Eastern Federal district	40,5	35,6	32,3	33,3	33,1	33,4	32,9	0,813
The Republic Sakha (Yakutia)	44,7	40,5	36,5	37,6	36,6	38,4	39,2	0,877
Women								
Russian Federation	29,5	26,3	22,9	22,0	22,5	21,8	21,5	0,729
Far Eastern Federal district	31,8	27,9	25,1	24,4	24,9	24,0	23,9	0,751
The Republic Sakha (Yakutia)	32,2	27,0	28,4	27,1	26,9	29,3	26,9	0,837

Table 5

Index of supermortality of men (mortality rate of males over mortality rate of women, the number of times)

	2002	2005	2010	2011	2012	2013	2014
On the overall mortality rate	3,49	3,75	3,66	3,47	3,77	3,76	3,62
On mortality rate from external causes	4,85	5,63	4,71	4,82	5,13	4,93	5,27
Exceeding the overall supermortality of men over supermortality men from external causes of death	1,39	1,50	1,29	1,39	1,36	1,31	1,45

began to make a major contribution to the mortality rate from external causes of death (nearly 24% of the total mortality from external causes) (Table 3). Over the years 1990-2015 growth of mortality rate from suicide in 1.4 times was observed. The number of deaths from murder tends to decline by 1.2 times. The decrease in 1.5 times the number of deaths from accidental alcohol poisoning it should also be noted. The dynamics of deaths due to road accidents is most favorable. Between 1990 and 2015, the number fell by more than 2.5 times.

The distribution of mortality from external causes by sex and age in the RS (Ya) shows as the total for all countries and for Russian traits and regional differences.

A comparative analysis of the gender structure of causes of mortality in the Republic Sakha (Yakutia) showed a marked change in the contribution of major causes of death by sex. So, external causes predominated in 1990 in the structure of mortality of the male population of the Republic, accounting for 33.5%, but by 2015, this class of causes of death retreated to the second position after diseases of the circulatory system, which accounted for 45.4% of all deaths.

The contribution of external causes

Table 6

Mortality rates of the working age population for different causes of death in the Republic Sakha (Yakutia), per 100 000 people of working age

The cause of death	2000	2005	2010	2015
Certain infectious and parasitic diseases	18,6	17,5	12,5	14,1
Cancer	78,4	79,0	64,2	63,3
Diseases of the circulatory system	193,2	264,2	260,3	188,6
Diseases of the respiratory system				
Accidents, poisoning and injuries (external causes)	324,2	291,7	252,9	192,2
Among them:				
Suicide	68,9	67,0	56,1	49,6
Violence (murder)	74,8	70,5	47,7	30,5
In total	732,9	773,6	725,5	542,9

Table 7

The excess of mortality from external causes in the RS (Yakutia) in comparison with the RF and the FEFD (number of times)

	2002	2005	2010	2011	2012	2013	2014
Men							
RS(Ya) / FEFD	1,03	0,91	1,05	1,01	1,03	1,03	1,04
RS(Ya) / RF	1,16	1,10	1,37	1,42	1,38	1,36	1,32
Women							
RS(Ya) / FEFD	0,89	0,70	0,96	0,96	0,88	0,94	0,87
RS(Ya) / RF	1,16	0,98	1,44	1,44	1,31	1,38	1,27

Table 8

The excess of mortality from various causes of external mortality for 100 thousand people in the RS(Ya) on mortality rates in the RF and the FEFD

	1990	1995	2000	2005	2010	2011	2012	2013	2014
Mortality from traffic injury									
RS(Ya) / RF	1,17	0,88	0,67	0,78	0,72	0,91	0,79	0,99	0,76
RS(Ya) / FEFD		0,80	0,67	0,73	0,64	0,80	0,70	0,92	0,77
Mortality from accidental alcohol poisoning									
RS(Ya) / RF	0,67	0,57	0,44	0,42	0,60	0,58	0,49	0,54	0,61
RS(Ya) / FEFD		0,63	0,60	0,41	0,61	0,63	0,54	0,59	0,73
Mortality from accidental drowning									
RS(Ya) / RF		2,09	2,25	2,02	2,46	3,02	3,02	2,90	3,24
RS(Ya) / FEFD		1,73	1,63	1,46	1,74	1,65	1,76	1,72	1,94
Suicide mortality									
RS(Ya) / RF		0,85	1,25	1,50	1,74	1,82	1,93	1,78	1,86
RS(Ya) / FEFD		0,70	0,97	1,11	1,20	1,25	1,30	1,23	1,24
Mortality from murders									
RS(Ya) / RF		0,86	1,89	2,12	2,58	2,38	2,59	2,59	2,33
RS(Ya) / FEFD		0,59	1,17	1,18	1,34	1,18	1,29	1,25	1,24

of death for men of Yakutia was much more in comparison with Russia and Far Eastern Federal district in 2002 and in 2014 (Table 4). The dynamics of this indicator were unidirectional both in Russia, in the Far East and Yakutia. However, the reduction of the contribution of external causes in the total mortality rate in the Republic was, unfortunately, minimal.

For women the general vector of changes of the contribution of external causes in total mortality was the same, but at lower levels compared to men. However, as both in men and women of the Republic Sakha (Yakutia) reduction of the contribution of external mortality to the overall mortality rate was markedly lower in comparison with the RF and Far Eastern Federal district women.

Supermortality of men, which is typical in general for the processes of mortality, in external causes of death is even more pronounced (table 5).

In 2015 the mortality from the external causes in men was in 4.5 times higher than for women. Moreover, excess is not decreasing, but, on the contrary, becomes more and more aggravated.

Not only gender but also age differences are characteristic of mortality from external causes. External causes rank first place among causes of death of able-bodied population for a long period, surpassing diseases of the circulatory system and neoplasms (Table 6). Between 1990 and 2015, a slight decrease of the coefficient of death from these causes occurred – 324.2 up to 192.2, or almost in 1.7 times.

Among the dead men the share of working-age is 60%. The excess mortality in men compared with similar indicators in women, especially in the group of working age continues to persist [5]. About a quarter of all deaths of women are in working age. In the context of individual causes of death the highest rates in the General population occur among deaths due to external causes.

High mortality from external causes has also territorial features. The Northern regions have a higher mortality from external causes, even in the Far Eastern Federal district Northern group of subjects also has a more high characteristics [1].

In the Republic Sakha (Yakutia) population mortality from external causes in Northern and Arctic areas is almost 2 times higher than the death rate average in the Republic [3].

The analysis of external causes of death of population in comparison with the Far Eastern Federal district and the Russian Federation finds higher mortality of men in the Republic of Sakha (Yakutia) in comparison

with Far East and especially Russian Federation (Table 7).

In women we observe another situation; the excess is only in comparison with Russia as a whole, moreover, what is more against the background of growth of the excess. In comparison with the Far Eastern federal district the mortality rates of women from external causes in the Republic are lower.

Significant regional specificity is noted on some causes of external mortality. The smallest gap with the mortality rates in Russia and the Far East can be traced in mortality from accidental alcohol poisoning and transport injuries (Table 8).

Mortality rates from alcohol poisoning in 2007, for example, were in 4 times lower compared to Russia and in 3.5 times in comparison with Far East. Mortality rates from transport injuries in the same 2007 year were in 1.9 times lower than in Russia and the Far Eastern federal district.

A different situation can be traced in other causes of external mortality. The high mortality rate from accidental drowning is the specific feature in Yakutia; for this reason, the greatest gap exists with indicators for the RF and FEFD. The gap in the mortality rates from murders and suicides is slightly less. However, during 1990-2014 vector dynamics changed its direction in contrast to mortality from accidental drowning, where excess rates were observed throughout the period under review. In the case of mortality from suicide and murder, the situation is reversed: if in early 90-ies of the last century, the situation of mortality from these causes in the Yakutiya was more favorable compared with RF and DFO, since 2000 the ratio has changed. The excess of mortality from murder and suicides became steady and fairly high, especially in deaths from murder in comparison with the Russian Federation.

CONCLUSIONS

Thus, in the Republic of Sakha (Yakutia) external causes of mortality have the same importance as disease of the circulatory system in terms of reduction of losses of demographic potential. Analysis of regional features of population mortality from external causes of death shows that in the Republic formed a significant loss of the demographic potential, which in turn should define priority measures to reduce mortality from external causes in the hierarchy the goals and objectives of regional demographic policy. Analysis of mortality from external causes proves once again that not all aspects of health and mortality depend on the health and preventive work within its framework. A deeper interagency approach is required for the purpose of strengthening of measures of social prevention, which will be more effective in the decline of mortality from external causes.

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