

SOURCES AND PERSPECTIVES OF MORTALITY REDUCTION IN RUSSIA

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Background.

Up to the beginning of the XXI century the problems of Russian mortality took their shape of comprehensive complex.

□ Extremely low life expectancy not only at the background of economically developed countries but also at the background of countries with similar to Russia's levels of economic development. Thus, life expectancy loss of Russian population was determined by rather low level of economic development from one hand, and by not targeting economic development on solution of social problems from another.

□ Russia's life expectancy lag was differently composed due to separate age groups. The main risk group was working population, where loss was determined not only by living standards of population but also by specific Russian risk factors related to life style peculiarities.

□ Russia's life expectancy lag is stratification of unresolved problems (or not fully solved ones) of different stages of epidemiologic transition.

Since January 1st 2006 Priority National Health Project started its realization. It included measures on restoration of preventive direction of health care, development of primary health care, increasing its availability and quality, provision of population with high-tech medical care. Following Priority National Health Project, Concept of Demographic Policy up to 2025 was adopted in 2007. Plans of implementation were adopted in furtherance of the Concept, and included separate Programs on reduction of mortality – from transport accidents as a leading death cause and also from main non-infectious diseases.

At the background of adopted measures, life expectancy during 2005-2014 increased by 6.4 years in men and by 4.2 years in women. The discussion topic is the life expectancy growth source: - effect of implemented measures or simply oscillatory trend at the background of long-term stagnation (Fig. 1). The answer to this question determines estimation of perspectives of mortality reduction in our country. Thus, analysis of arguments of both points of view makes up the study purpose.

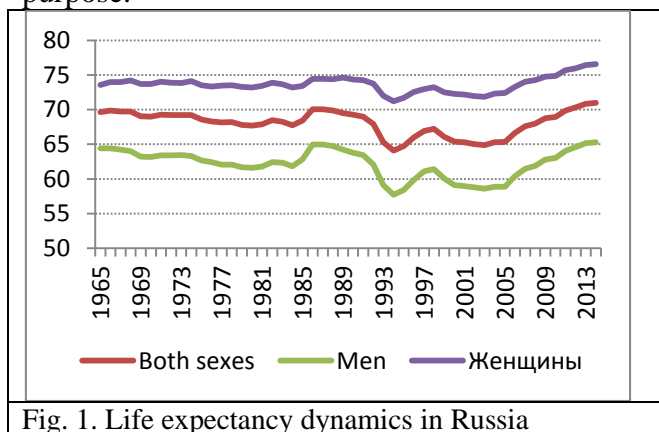


Fig. 1. Life expectancy dynamics in Russia

Methods and data. We used data on age-specific mortality in Russia during 1965-2014 from main death causes according to ICD-10. We applied methods of component analysis for estimation of input of age groups and causes of death into life expectancy differences within study period.

Results.

Firstly, we analyzed the arguments of the hypothesis according to which life expectancy in Russia varies around one and the same life expectancy values during the last half

century. Using component analysis we analyzed input of separate age groups into life expectancy differences between years 1965, 1987 and 2014 when life expectancy values were nearly the same.

As one can see at Fig. 2, similarity of life expectancy values hides different age-specific mortality structure. In comparison with 2014 mortality of children and adolescents and firstly of infants in 1987 and especially in 1965 was significantly higher. Also higher mortality levels were characteristic to the elderly over 60 years. At that, in working ages especially in men the situation in 2014 appears worse than in 1987 and even in 1965 or half a century ago. Thus, there is no any

stagnation of mortality. With numerically similar levels of life expectancy in 1965, 1987 and 2014 age-specific mortality structure underwent principal changes.

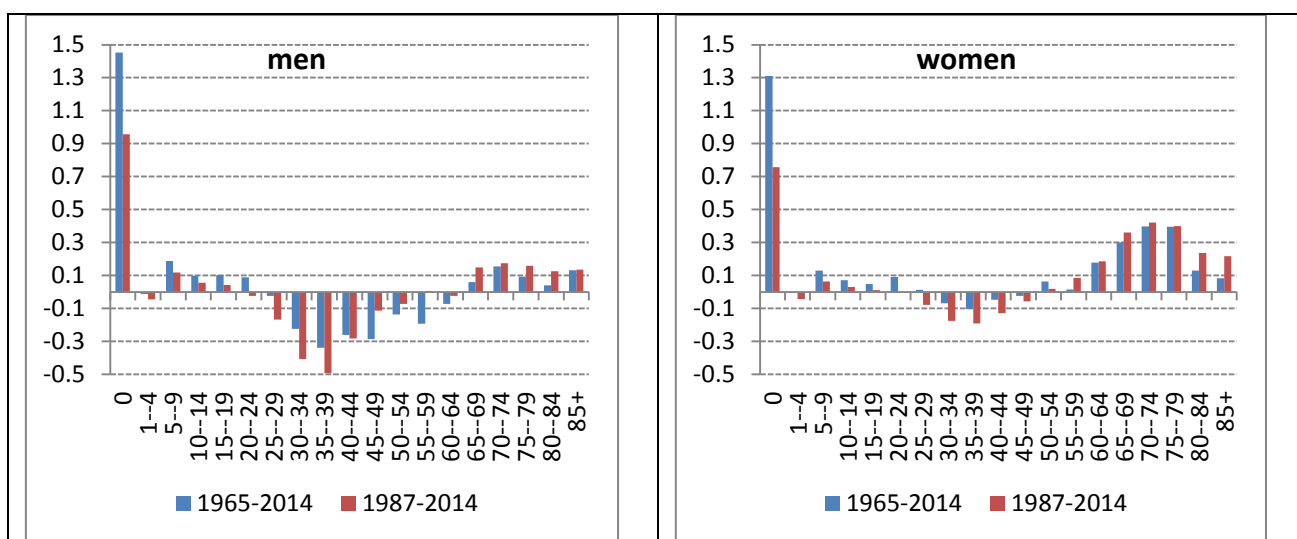


Fig. 2. Input of age groups into life expectancy differences between 1965, 1987 and 2014, years

As to the second hypothesis, according to which life expectancy increased due to adoption and implementation of policy measures in health care since 2005, it is important to analyze thoroughly trends of age-specific mortality (tab. 1).

Table 1. Population mortality dynamics in Russia in separate age groups, per 1000 population of corresponding sex and age.

	Age group, years									
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
	men									
2000	2.124	4.947	5.992	7.019	9.123	12.701	17.859	24.423	33.363	44.525
2001	1.919	4.35	5.809	7.051	9.418	13.134	18.67	25.731	33.937	46.365
2002	1.828	3.958	5.664	7.271	9.865	13.93	19.551	26.909	34.685	49.372
2003	1.738	3.903	5.912	7.503	10.186	14.437	20.061	27.914	34.985	49.747
2004	1.682	3.907	6.117	7.776	10.205	14.206	19.535	26.783	34.409	47.502
2005	1.626	3.798	6.462	8.199	10.301	14.331	19.437	26.895	34.442	46.946
2006	1.580	3.439	6.17	7.818	9.127	12.418	16.713	23.567	31.015	41.695
	women									
2000	0.801	1.132	1.341	1.729	2.326	3.367	5.081	7.595	11.384	15.815
2001	0.749	1.116	1.36	1.814	2.432	3.495	5.325	8.006	11.645	16.373
2002	0.709	1.05	1.411	1.942	2.632	3.762	5.543	8.299	11.96	17.047
2003	0.689	1.047	1.514	2.054	2.797	3.954	5.738	8.634	12.104	17.262
2004	0.677	1.0	1.559	2.126	2.836	3.913	5.565	8.227	11.854	16.776
2005	0.686	1.026	1.614	2.206	2.943	4.028	5.556	8.127	11.783	16.541
2006	0.635	0.94	1.535	2.047	2.669	3.584	4.957	7.203	10.755	15.072

Since 2001 adolescent and young people 15-24 years mortality started to reduce, after 2003 the reduction trend was supported also by older working ages 40-64 years. Only in 25-39 years old group mortality continued to increase up to 2005. After 2005 process of mortality reduction covered all working age groups which provided visible growth of life expectancy. Thus, positive trend took its shape before adoption and implementation of policy measures in health care and was conditioned by living standards' improvements, reduced unemployment and widening social perspectives.

Did policy measures in health care influence life expectancy growth?

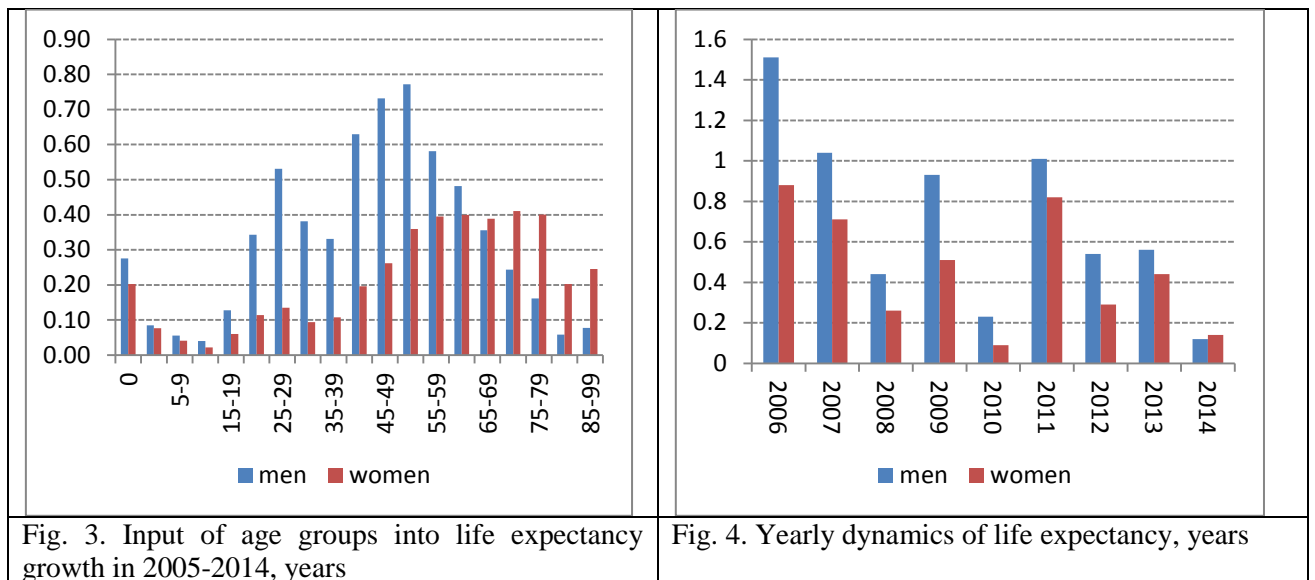


Fig. 3. Input of age groups into life expectancy growth in 2005-2014, years

Fig. 4. Yearly dynamics of life expectancy, years

Positive mortality dynamics was registered in all ages, thus, life expectancy increase was determined by universal positive mortality shifts. This constitutes solid foundation for further positive dynamics. At the same time, input of separate age groups is not the same. Firstly, it is necessary to point at an input that is continuously done by infant mortality and to less extent by children mortality apart of already achieved low indicator's level. Maximal input into life expectancy growth was made by men from age group 40-54 years (34.7% of total growth) and by women from age group 50-79 years (57.5% of total growth).

Different age pattern of life expectancy growth in men and women reflects specific factor determination of mortality reduction and consequently, structure of death causes, mortality reduction from these causes lead to life expectancy growth.

In men, equal input into life expectancy growth was brought in by reduced mortality from cardio-vascular diseases and external causes (2.41 and 2.29 years respectively). In fact, age profile of this input intersects to a certain extent: in case of cardio-vascular diseases the main input was due to reduced mortality in ages 40-70 years; in case of external causes – in ages 20-55 years. This allows to state that at least in interval 40-55 years risk factors of mortality from cardio-vascular diseases and external causes have some common features. The main input from reduced mortality from digestive and respiratory diseases, infections and even ill-defined conditions falls into this age interval.

In women the main input into life expectancy growth was due to reduced mortality from cardio-vascular diseases (2.56 years). At that, age profile is determined by ages 55-80 years which covered two thirds of cumulative input of cardio-vascular diseases into life expectancy growth. Reduced mortality from external caused determined life expectancy growth by 0.81 years i.e. three-fold lower than cardio-vascular diseases. At that age groups 20-60 years dominate in age profile of growth. They cover more than 70% of total input. It is characteristic that maximal input into life expectancy growth due to other causes (respiratory and digestive diseases, infections and ill-defined conditions) was made by age groups 40-60 years. This integrates them from the point of factor determination with external causes but not with cardio-vascular diseases.

In other words, in men maximal effect in life expectancy increased during the study period was received due to reduction of mortality related to behavioural risk factors, which lead to expected reduction of loss in the main risk group – working population. In women not denying importance of healthy behavior, the main effect resulted from health care efforts, that expectedly lead to reduced loss especially in the elderly.

General positive dynamics of mortality trends during past decade shouldn't mask the fact that from year to year rates of positive dynamics reduce. In 2014 life expectancy levels in men and women do not significantly differ from 2013 indicators. This means that sources of growth are depleted, and it is necessary to address to new strategies for the Russian health care.

The strategy of preventable mortality is inevitably in the agenda at the background of costs reduction in health care. Analysis of Russia's situation using European list of preventable causes (W.W.Holland, 1991 «European Community Atlas of Avoidable Death») showed that since 2003 there is sustainable trend of reducing mortality from preventable causes. Up to 2011 Russia's gap reduced both with EU old and new member states respectively: in men from 4.5 and 2.5 times to 3.5 and 2.0 times; in women from 3.3 to 2.0 times to 2.6 to 1.7 times (fig. 5).

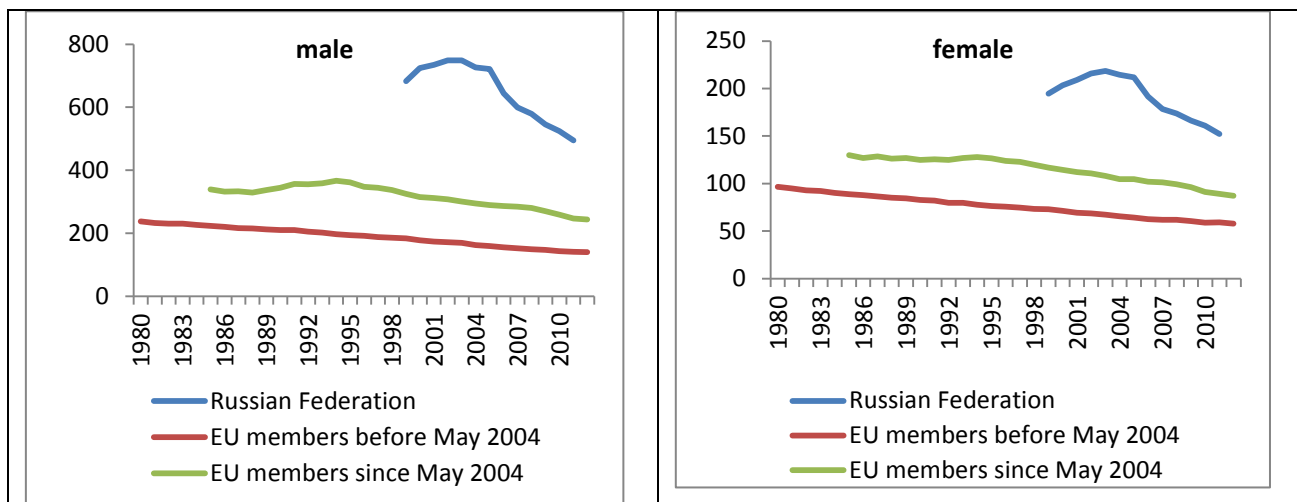


Fig. 5. Dynamics of mortality from preventable causes in ages under 65 years, per 100,000, standardized rate

At the same time, reserves are still big (tab. 2), especially in relation to causes preventable by measures of primary prevention (group 1). Mortality from them estimates about 80% of total loss from preventable causes in men and about 65% in women. However, necessity of healthy life style is not perceived as a priority of health care policy, and rates of mortality reduction from causes preventable by primary prevention measures (group 1) occurred nearly the same as rates of loss reduction from causes depending on treatment quality (group 3).

Additionally, analysis of regional peculiarities of preventable mortality showed that levels differ by 6.5 times in men and by 7.9 times in women. At that, maximal differences relate to death causes preventable at the level of primary prevention (group 1) – by 7.2 times in men and by 14.8 times in women. More homogenous picture is in causes preventable by timely diagnostics (group 2) and quality of treatment (group 3). This evidences about effect of the policy implemented during past decade and aimed on leveling availability of medical care across the country. Estimation of achieved results means that key direction in reducing preventable mortality at the next stage will be prevention of behavioural risk factors. In its turn, this means that central point of health care reformation is active work with population in aims to increasing attention to their health from one hand, and necessity of reorientation of health care to activity of primary care, from another.

Table 2. – Dynamics and structure of preventable mortality in Russia

	Per 100,000 population under 65 years			
	Group 1	Group 2	Group 3	Total
men				
2000	557.8	2.1	143.3	703.2
2014	343.6	2	89.8	435.4
2014/2000	-38.4	-4.8	-37.3	-38.1
women				
2000	145.6	27.3	39.2	212.1
2014	92.7	24.2	24.7	141.6
2014/2000	-36.3	-11.4	-37.0	-33.2

Conclusions.

Positive trend of mortality reduction took its shape before adoption and implementation of policy measures in health care and was conditioned by living standards' improvements, reduced unemployment and widening social perspectives. Measures in health care increased growth rates and increased length of growth period which compensated worsening situation in economics after 2012.

In men the main effect in life expectancy growth was received due to reduced mortality related to behavioural risk factors which lead to expected reduced loss in the main risk group – working population. In women not denying importance of healthy behavior, the main effect resulted from health care efforts, which expectedly lead to reduced loss especially in the elderly.

Up to now, sources of growth are depleted due to worsening economic situation and reduced effect of extensive measured in health care. Reserves of further mortality reduction are connected with healthy life style, because reduction of mortality from causes that could be prevented by measures of primary prevention estimates from 65% in women to 80% in men of preventable mortality.