L.F. Timofeev, N.V. Savvina, V.G. Krivoshapkin, I.P. Lutskan, A.L. Timofeev

# MEDICAL AND DEMOGRAPHIC SITUATION IN THE REPUBLIC OF SAKHA (YAKUTIA) IN THE STRUCTURE OF THE STRATEGIC TASKS OF THE DEVELOPMENT OF THE RUSSIAN FEDERATION TILL 2024

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The article presents the medical and demographic situation in the Republic Sakha (Yakutia) for the period 2010-2017. The assessment of medical and demographic indicators was carried out on the basis of official data of the Federal State Statistics Service of the Russian Federation (FSSS or Rosstat) and the FSSS Territorial Unit of the Republic Sakha (Yakutia). An attempt was made to predict the possibility of fulfilling indicator values in accordance with the strategic objectives of the development of the Russian Federation until 2024. The authors came to the conclusion that the goals would be achievable, but in case that the rates of reduction of total mortality and infant mortality, as well as an increase in life expectancy in the RS (Ya) will be maintained and even improved.

**Keywords:** medical and demographic indicators, fertility, mortality, natural population growth, total fertility rate, infant mortality, life expectancy, Republic Sakha (Yakutia).

**Introduction.** In the Russian Federation sufficient attention is paid to demographic policy. So, already in the preamble of the Presidential Decree "On the national goals and strategic objectives of the development of the Russian Federation until 2024" dated May 7, 2018 No. 204, the need to ensure:

- sustainable natural growth of the population of the Russian Federation;
- increase life expectancy to 78 years (by 2030 – up to 80 years).

And when developing national programs in the areas of demographic development and health care, the following tasks are set to improve the medical and demographic situation in the country:

- an increase in healthy life expectancy (HLE) to 67 years;
- an increase in the total fertility rate (TFR) to 1.7;
- decrease in mortality rates of the working age population to 350 per 100 000 of population; deaths from circulatory system diseases (CSD) up to 450 cases per 100 000 population; mortality from neoplasm's, incl. from malignant, up to 185 cases per 100 000 population; infant mortality (IM) up to 4.5 cases per 1000 born children.

It is clear that this Decree made amendments to the resolution of the Government of the Russian Federation "On approval of the state program of the Russian Federation "Healthcare Development" dated December 26, 2017 No. 1640 (by 2025: increase in life expectancy at birth to 76 years, decrease in the mortality rate of the working age population up to 380 per 100 000 population, reducing mortality from CSD to 500 per 100 000 population).

**Research material and methods.** The official statistics of the Federal State Statistics Service (FSSS or Rosstat) and the FSSS Territorial Unit of the RS (Y) (Sakha (Yakutia) Stat) for 2005, 2010-2017 [1, 2, 4] were used.

When assessing the levels of various medical and demographic indicators, the percentile method was applied. According to this method, regions with indicators up to the 10th percentile belonged to territories with a low level of a particular indicator, from 10 to 25th percentile - with a level below the average, from 75 to 90th - above the average and over 90th percentiles - with a high level. Obviously, that the regions with indicators ranging from the 25th to the 75th percentile, belonged to the group with average values.

**Results and discussion.** Let's consider the medical-demographic situation in the Republic Sakha (Yakutia) in 2005, 2000-2017 in a comparative aspect with similar average Russian indicators. First, we compare the birth rate, mortality, natural increase and total fertility rate (TFR) (Fig. 1). It should be immediately emphasized that according to these indicators, Yakutia and in the most difficult 1990-2000s was always among the top 10 territories in the whole country.

It is clear that for all the years under consideration the levels of fertility and natural growth in the RS (Ya) were high, and in terms of mortality - low in a comparative aspect with similar data from all 85 constituent entities of the Russian Federation. In addition, all indicators of our republic were in a comparative aspect better than the average in the Far Eastern Federal District (FEFD). By the end of 2017, according to the specified indicators, Yakutia was also among the top 10 territories.

We see quite good indicators in terms of the total fertility rate (Fig. 2). Recall for comparison the indicators of the TFR in 2002: the Russian Federation - 1.286, RS

**TIMOFEEV Leonid Fedorovich** – Doctor of Medical Sciences, Professor of the Department of Public Health and Healthcare, General Hygiene and Bioethics of the NEFU Medical Institute named M.K. Ammosov. 677000 Yakutsk, Oyunsky st., 27. E-mail: tlfnauka@mail.ru, **SAVVINA Nadezhda Valeryevna** – Doctor of Medical Sciences, Professor, Head of the Department of Public Health and Healthcare, General Hygiene and Bioethics of the NEFU Medical Institute named M.K. Ammosov. 677000 Yakutsk, Oyunsky st., 27, E-mail: nadsavvina@mail.ru, **KRIVOSHAPKIN Vadim Grigorievich** – Doctor of Medical Sciences, Professor, Academician of the Academy of Sciences of the Republic of Sakha (Yakutia), Counselor of the Academy of Sciences of RS (Y). E-mail: kukai1937@gmail.ru, **LUTSKAN Ivan Petrovich** – Candidate of Medical, Associate Professor of the Department of Public Health and Healthcare, General Hygiene and Bioethics of the NEFU Medical Institute named M.K. Ammosov. 677000 Yakutsk, Oyunsky st., 27, E-mail: lutskan@mail.ru, **TIMOFEEV Artem Leonidovich** – post-graduate student of the Department of Public Health and Health, General Hygiene and Bioethics of the NEFU Medical Institute M.K. Ammosova. Address: 677000 Yakutsk, ul. Oiunsky, 27. Cont. tel. 8-964-423-72-72. E-mail: su-yuol@mail.ru

(Y) – 1,847. A slightly different picture is observed when considering the mortality rates of the population at working age and infant mortality (Fig. 3, 4).

It can be seen that the mortality rates of the working-age population in the RS (Ya) are quite comparable with the average Russian data. However, there are years in the IM where our republican data were noticeably worse than in the whole country (2013 and 2016). For the last two indicators, the republic is among the subjects of the federation with average levels of these values.

The life expectancy in RS (Ya) compared to the Russian Federation and the Far Eastern Federal District (Fig. 5) is of some interest.

It can be seen that there were years with the level below the average for life expectancy (both sexes) in 2011 and 2012, and 2010-2012 – on life expectancy among women. Comparison of all indicators of the Republic of Sakha (Yakutia) and the Far Eastern Federal District for all the years under consideration is in favor of our republic, with the exception of infant mortality in 2015-2016.

Next, we conducted a correlation analysis between life expectancy (both sexes) and a number of mortality and fertility rates for 2000-2017 (Table 1). It is quite obvious that in order to achieve the goal of life expectancy, it is necessary to redouble efforts to reduce the mortality rate of the population at all ages, but first of all - the infant and working-age population.

Judging by the data of Rosstat in 2018, the vital statistics in the Russian Federation continue to deteriorate (the birth rate is 10.9, the mortality rate is 12.5, the EP is -1.6). True, the indicator IM slightly improved, which decreased to 5.1 per 1000 live births. However, it can be seen that the task of sustainable natural growth in the population of the Russian Federation, however, and reducing mortality from a number of reasons will be difficult. I want to believe that it is relatively easier to solve the problem of increasing the TFR to 1.7.

As for Yakutia, the mortality rates of CSD and neoplasms currently fit into the indicator values of 2024 (Table 2). At the same time, standardized indicators "paint" a slightly different picture. For example, consider the usual data of Rosstat and standardized mortality rates (SMR) from CSD and from neoplasms, presented in Table 3 [3]. It can be seen that standardization immediately worsens the death rates and ranking places of the republic in comparison with

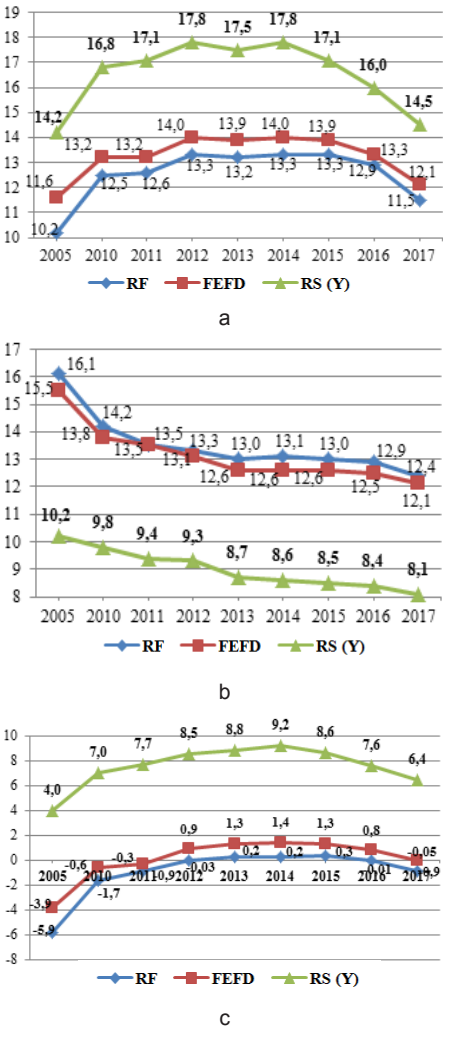



**Fig. 1.** Dynamics: а – of birth rates, б – of death rates, в – of the coefficients of natural population growth

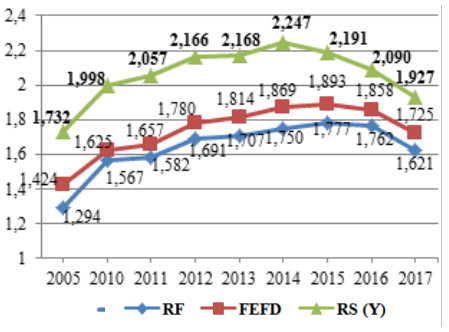



**Fig. 2.** The dynamics of the total fertility rate

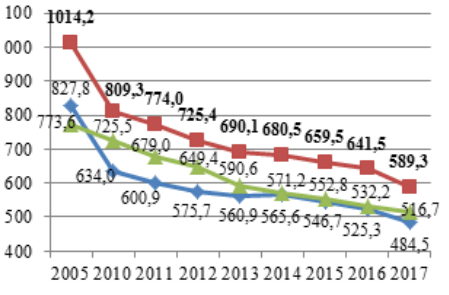


**Fig. 3.** Dynamics of mortality of the population at working age

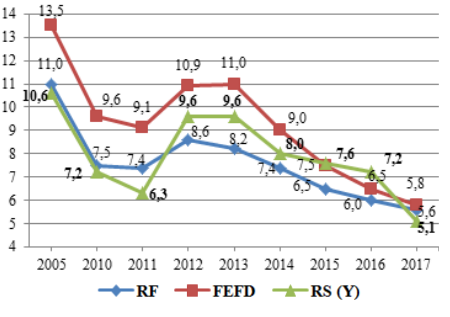



**Fig. 4.** Dynamics of infant mortality

**Table 1**

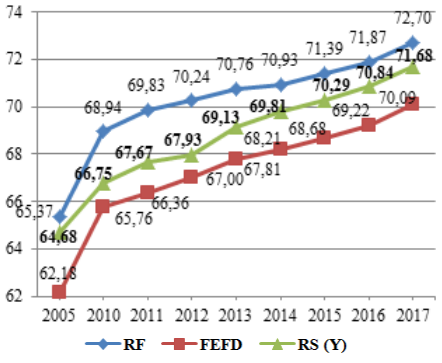
**Correlation analysis between life expectancy and mortality and fertility rates (from 2000 to 2017)**

| Year | Life expectancy | Total mortality | Infant mortality | Mortality of the working population | Fertility |
|---|---|---|---|---|---|
| 2000 | 63.66 | 9.7 | 17.6 | 732.9 | 13.7 |
| 2017 | 71.68 | 8.1 | 5.3 | 516.7 | 14.4 |
| r | | -0.96 | -0.83 (-0.94 за 2000-2011 гг.) | -0.97 | 0.58 |

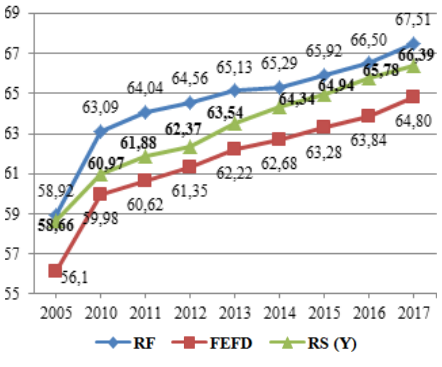
**Table 2**

**Mortality of the population from the main classes of causes of death in the RS (Y) and the Russian Federation in 2017**

| | Mortality from CSD | | Mortality from neoplasms | | Mortality from external causes | |
|---|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | Male. | Female. |
| RS (Ya) | 423.5 | 308.2 | 154.2 | 119.7 | 225.5 | 47.0 |
| RS (Ya) (both sexes) | 364.2 | | 136.5 | | 130.0 | |
| RF (both sexes) | 587.6 | | 200.6 | | 100.4 | |




a

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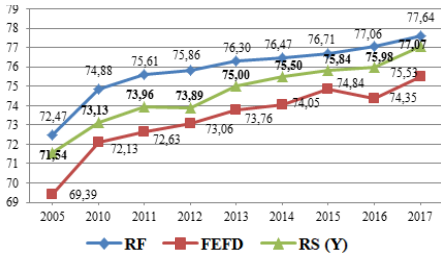


c

**Fig. 5.** Life expectancy: a- both sex, b – men, c- women

other subjects of the Russian Federation.

It is known that the forecast may not be accurate. So, if even the most important department –- Rosstat – in May 2016 gave a forecast for the TFR (medium variant) for 2017 for 1,786 children per 1 woman, but in reality they received 1,621! However, we tried to do it by HLE, taking into account their growth rates, starting in 2010 (Table 4).

In the Table 5 there are considered comparative indicators of Strategy of social and economic development of the RS (Ya) until 2030 with the definition of the main directions until 2050, approved by the Decree of the Government of the RS (Ya) No. 455 dated December 26, 2016 (Strategy-2030) and the Strategy of Social and Economic Development RS (Y) until 2032 with a target vision until 2050, adopted by Law of RS (Y) No. 45-VI of 12/19/2018 (Strategy-2032).

**Table 3**

**Mortality and standardized death rates from circulatory system diseases and neoplasms in the RS (Y) and the Russian Federation**

| | Rosstat | SMR from CSD (2016) | Rosstat | SMR from neoplasms |
|---|---|---|---|---|
| RF | (2010) | 495.9 | 204.4 | 178.5 |
| RS (Ya) | 370.6 | 485.1 | 120.3 | 173.1 |
| Ranked place | 4 | 44 | 6 | 27 |

**Table 4**

**Life expectancy forecast in the Republic of Sakha (Yakutia) by 2024**

| | 2010 | 2017 | 2024 |
|---|---|---|---|
| Life expectancy (both sexes) | 66.75 | 71.68 | 76.98 |
| Life expectancy (male) | 60.97 | 66.39 | 72.30 |
| Life expectancy (female) | 73.13 | 77.07 | 81.23 |

**Table 5**

**Indicator values for demography according to the Social and Economic Development Strategies of the Republic of Sakha (Yakutia)**

| | Strategy -2030 | Strategy -2032 |
|---|---|---|
| Life expectancy | 77 | 80 (78 к 2024 г.) |
| Total mortality | 7.5 | 7.0* (7.0 к 2024 г.) |
| Infant mortality | 4.4 | 3.7 (4.5 к 2024 г.) |
| Total fertility rate | 2.6 | 2.3 (2.07 к 2024 г.) |

* standardized indicator

**Conclusion.** Thus, we reviewed the medical and demographic situation in the RS (Ya) in dynamics and evaluated the possibility of achieving indicator values in 2024. We conclude that they are generally achievable, but on the condition that the rates of decline in the overall mortality of the population and the IM, as well as the increase in life expectancy in the RS (Ya), are maintained and even improved. The effectiveness of measures to reduce the mortality rate of the population of the republic can also be assessed by the results of the implementation of the "Concept for reducing the mortality rate of the population of the Republic of Sakha (Yakutia) from preventable causes and cancer for the period up to 2025".

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