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INFANTILE DEATH-RATE TRENDS IN REPUBLIC INGUSHETIYA DURING SOVIET AND NEW RUSSIAN PERIODS

Artur A. Almukhametov [1, 2], Anas A. Gilmanov[2], Damir I. Marapov[2], Magomedbashir H. Balaev[2], Ildar R. Iskandarov[2]

[1] Medical and sanitary part of FSAEI of HE "Kazan (Volga region) Federal University, Kazan, Russia

[2] Kazan State Medical University Russian Ministry of Health, Russia

Abstract:

The level of infantile death-rate is an indicative indicator of the development and soundness of the healthcare system of any state. An analysis of the dynamics of the infantile death-rate makes it possible to evaluate the effectiveness of measures aimed at the development of public health. In this regard, close attention is required for the study of regions with high IM indicators, including the Republic of Ingushetia. To understand the present level of death in the 1st year of life in the Republic of Ingushetia, it is necessary to follow the dynamics of the infantile death-rate, as in the years of the previous periods: the Soviet (1937-1990) and the new Russian (1991-2004) and the last decade (2005- 2014).

Materials and methods. *Materials about infantile mortality in the Republic of Ingushetia in Soviet and the latest Russian periods are studied. For an assessment of level death of children of the 1st year life used infant mortality rate.*

Results. Conclusions. *During the Soviet period in Chechen-Ingush Autonomous Soviet Socialist Republic the level of infantile death-rate was the greatest across North Caucasus region. In the 90th years of the last century its level has increased up to 28,8±8,5 ‰. From the middle of the first to the middle of the second decade of the XXI century there was a decrease by one and a half times an indicator (to 25,7 to 14,2 ‰). At the same time the tendency of infantile mortality in Ingushetia differs from the general orientation to decrease in an indicator among other territories of North Caucasus federal district. Death rates of children till 1st year of life in the city district of the republic for 2005-2014 (on average 21,5 ‰) are higher than in rural areas (13,4 ‰) that is atypical for modern Russia.*

Keywords: *infantile death-rate, Soviet and Russian period, Republic of Ingushetia, Magas, children of the 1st year life.*

Corresponding author:

Artur A. Almukhametov,

Medical and sanitary part of FSAEI of HE "Kazan (Volga region) Federal University, Kazan, Russia

E-mail: artyr_efendi@mail.ru,

QR code

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INTRODUCTION:

The level (coefficient) of infant mortality (the death at the 1st year of life) is an indicative indicator of any state healthcare system development and soundness. The analysis of the infant mortality rate (IMR) dynamics makes it possible to evaluate the effectiveness of measures aimed at the development of public health. In this regard, a close attention is required for the study of regions with high IMR indicators, including the Republic of Ingushetia (RI). In order to understand the present level of death during the 1st year of life in the Republic of Ingushetia, it is necessary to follow IMR dynamics, as during the years of the previous periods: the Soviet (1937-1990), new Russian (1991-2004) and the last decade (2005-2014).

MATERIALS AND METHODS OF RESEARCH:

The study material was represented by the statistical data on infant mortality in the Republic of Ingushetia during the Soviet (1937-1990) and the newest Russian (1991-2014) periods, published in official sources: the republican medical center of the Republic of Ingushetia (the collections of annual statistical reports), the collections of Rosstat. The estimation of the death rate among 1-year-old children was carried out according to the infant mortality rate. The results of the study were processed using IBM SPSS Statistics v.20.

RESULTS AND DISCUSSION:

The Republic of Ingushetia (RI) is Russian Federation (RF) subject, which is part of the North Caucasian Federal District (FD). RI was established on December 29, 1992, its capital is Magas (since 2000).

RI borders with the Republic of North Ossetia-Alania to the west, with the Chechen Republic to the east, with Georgia to the south. The population of the Republic of Ingushetia makes 463.8 thousand people as of January 1, 2015, including the city citizens - 189,0 (or 40.8%) and rural citizens - 274.8 (or 59.2%). The national composition of the population: Ingush - 94.1%; Chechens - 4.6%; Russians - 0.8%; others - 0,5%.

During the Soviet period, Ingushetia was united with Chechnya by common ethnicity. After the declaration of independence of Chechnya in 1991, the Chechen-Ingush ASSR actually ceased to exist and Ingushetia remained outside of any state associations. On June 4, 1992, the Supreme Council of the RSFSR adopted the Law "On the Establishment of the Ingush Republic within Russian Federation". The Chechen-Ingush ASSR was officially divided into the Ingush Republic and the Chechen Republic. The Constitution of Russian Federation, which entered into force on December 25, 1993, confirmed the existence of the Ingush Republic (in the modern transcription - the Republic of Ingushetia, or RI).

The RI consists of the officially designated North-Caucasian FD (separated from the Southern FD on January 19, 2010), which also includes the Chechen Republic, the Republic of Dagestan, the Kabardino-Balkarian Republic, the Karachay-Cherkess Republic, the Republic of North Ossetia-Alania and the Stavropol Territory.

To assess the death rate of 1-year-old children, they used IMR (m0) or the ratio of the number of deaths before the 1st year of life to the number of children born alive.

For the last period (2005-2014) this indicator was calculated according to the detailed methodology:

$$m_0 = (M_0 / N + M_{0\ -1} / N_{\ -1}) \text{ x } 1000,$$

Where: M_0 – the number of deaths before the 1st year of life from those born in a given year;

N – the number of children born alive in a given year;

$M_{0\ -1}$ – the number of deaths before prior to 1st year of life among those born in the previous year;

$N_{\ -1}$ – the number of children born alive in the previous year.

During the Soviet (1937-1990) and the beginning of the new Russian (1991-2004) period, due to the lack of all necessary information, the indicator was calculated by the following method:

$$m_0 = (M_0 / N) \text{ x } 1000,$$

where: M_0 – the number of deaths before the 1st year life among those born in a given year;

N – the number of children born alive in a given year.

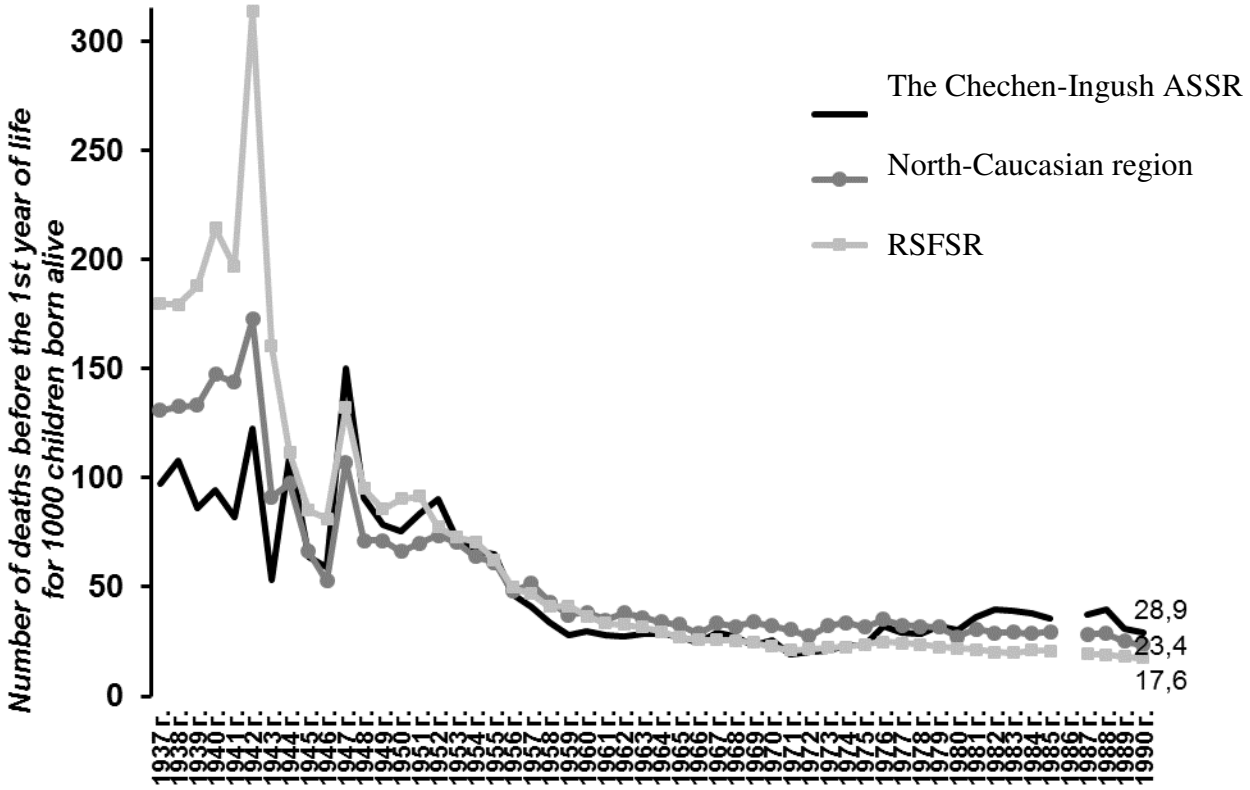

Fig. 1. IMR in the Chechen-Ingush ASSR*, the North Caucasus region and the RSFSR during 1937-1990**

Note: * The Chechen-Ingush ASSR - in 1937-1943 and 1957-1990, the Grozny region - in 1944-1956;
** The North Caucasian region of the RSFSR is calculated according to the current composition of the North Caucasus Federal District Russian Federation subjects.

At the beginning of the Soviet period of Ingushetia development (Figure 1), the infant mortality rate within the boundaries of the specified territorial subject in 1937-1940 (IMR = 97.3 ± 10.4 ‰) was significantly smaller than the indicators of the North Caucasus region and the RSFSR (139.1 ± 8.2 ‰ and 197.3 ± 17.9 ‰, respectively).

During the years of the Great Patriotic War, this trend remained, although the level of IMR during this period was very variable, reaching the highest values of 122.6 and 109.9 of child deaths during the first year of life in terms of 1000 children born alive in 1942 and 1944, and it also decreased to 53.1 and 4.0 pro mille in 1943 and 1945.

After the GP War, there was the decline in infant mortality in 1945-1946, which fits perfectly into all-Russian trend. During this period the IMR in Chechen Republic and Ingushetia was at the level of 64.0-59.3 ppm, which is 32.9-36.7% lower than in the RSFSR. But during this period the deportation of people was carried out accused of collaboration with the invaders, including Chechens and Ingushs. In 1947, after the largest post-war famine and the indicated political decision, there was an almost threefold increase of the infant mortality rate (up to 150.4 ‰) over the territory belonging to the Chechen-Ingush ASSR, when it exceeded similar indicators of the North Caucasus region and the RSFSR (by 40.5% and 13.9% respectively).

Since that time, throughout the second half of the 1940-ies and until the mid-1950-ies, the population of the territory that used to belong to the Chechen-Ingush ASSR had the highest level of IMR (71.6 ± 18.9 ‰) among its neighbors in the North Caucasus region (Figure 2).

After the political rehabilitation of the Ingush people and the return of the former status (1956) to the republic, the infant mortality rates in the Chechen-Ingush ASSR declined and already had the average values for the region (28.2 ± 7.4 ‰), its level was

significantly lower than that for the Dagestan ASSR (51.5 ± 17.0 ‰), the Kabardino-Balkarian ASSR (30.1 ± 7.9 ‰) and in some years for the Stavropol Territory (35.8 ± 8.2 ‰ in 1957-1962).

The new growth of infant mortality in the Chechen-Ingush ASSR during the Soviet period began in the mid-1970-ies and by the beginning of the 1980-ies the level of IMR in this republic (34.4 ± 5.5 ‰) exceeded the same index of its neighbors in the North Caucasus region once again. At this point in time, it remains above not only regional but also all-Russian indicators (in 1980-1990 - 27.2 ± 3.8 ‰ and 9.9 ± 1.8 ‰, respectively).

If we assess the differences of IMRs depending on the place of residence of the deceased children, in Chechen-Ingush ASSR during the Soviet period the urban index exceeded rural one almost one-and-a-half times, which was only briefly interrupted twice in the mid-1940-ies and 1950-ies. The prevalence of urban IMR level over a similar rural indicator is fundamentally different from the trends that developed by the beginning of the second half of the twentieth century on the territories of the North Caucasus region and across the RSFSR in general. And it was only in the late 1970-ies when the Chechen-Ingush ASSR entered the channel of regional and all-Russian tendencies of the usual IMR correlation for urban and rural areas

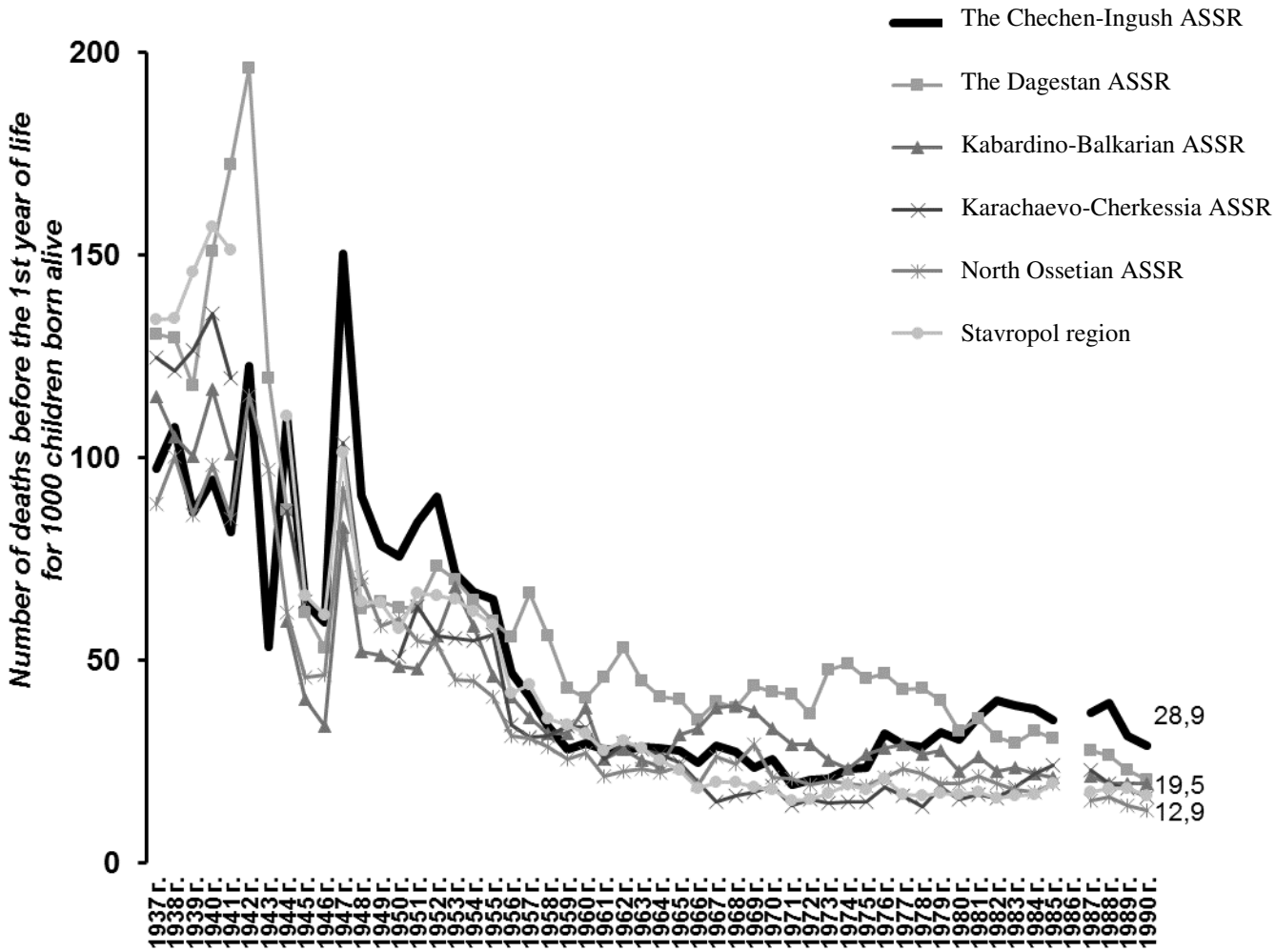

Fig. 2. IMR among the subjects of the North Caucasus region of *RSFSR in 1937-1990

Note: * The North Caucasus region is calculated according to the current composition of its subjects.

The gender differentiation of infant mortality rates adds a greater intensity to the already noted trends for the Chechen-Ingush ASSR in the male subpopulation.

During the mid-1990-ies, there was a sharp increase in the deaths among children during the first year of life in the Ingush Republic due to well-known events, which remained at a high level until 2004 (28.8 ± 8.5 ‰), which practically threw out the republic on the level of IMR half a century ago. At the same time, IMR in RI exceeded similar indicators, both in the North Caucasus (16.9 ± 4.3 ‰) by 1.6-2.1 times, and for RF in general (14.9 ± 3.3 ‰) by 1.8-3.0 times (Figure 3).

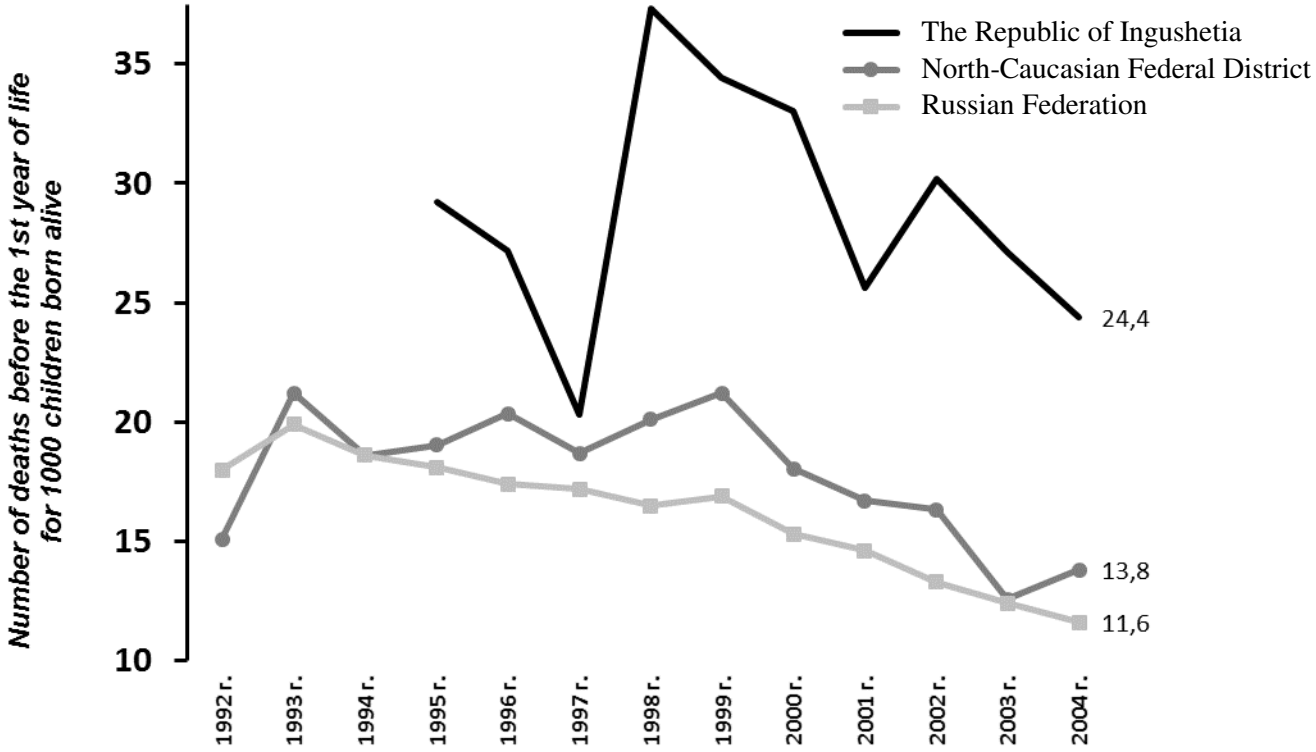

Fig. 3. IMR in the RI, the North Caucasus region and RF during 1992-2004

Note: * The North Caucasus region is calculated by the composition of the subjects included in the North-Caucasian FD since 2010.

Ingushetia differed markedly from its regional neighbors in terms of infant mortality during the late twentieth and early nineteenth centuries (Figure 4), and only periodically competed with the Republic of Dagestan in terms of IMR level (24.4‰ in 1997 against RI - 20.3‰).

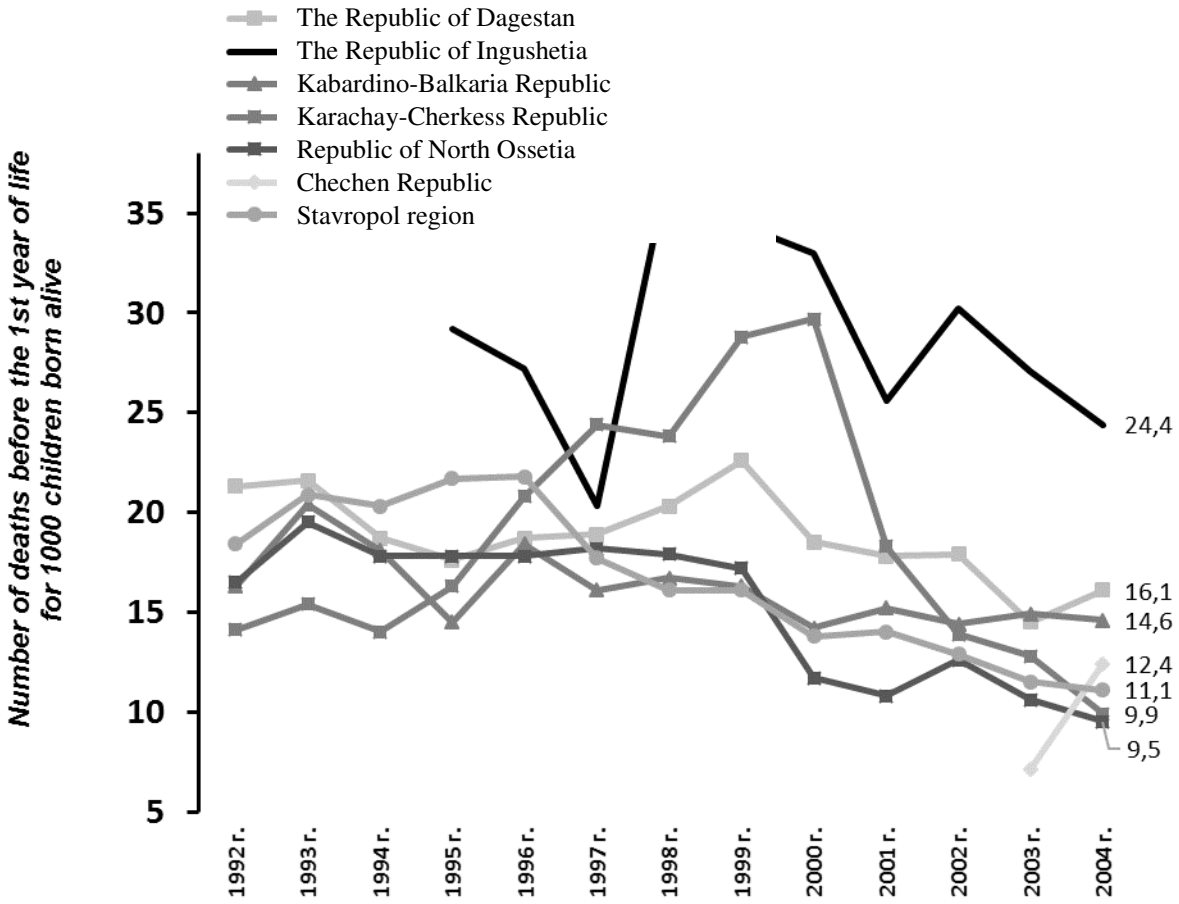

Fig. 4. IMR among the territories of the North-Caucasian region during 1992-2004

Note: * The North Caucasus region is calculated by the composition of the subjects included in the North-Caucasian FD since 2010.

It should be noted that during this period the statistics of the death among the children during their first year of life was almost absent in the Chechen Republic, which made it impossible to compare them.

If we compare the levels of IMR that RI had since the middle of the first to the middle of the second decade of the 21st century, we can speak of an almost 1.5-fold decrease of this indicator, from 25.7 deaths before the 1st year of life among 1000 children born alive in 2005 to 14,2 in 2014 (or 44.7%). However, the changes of infant mortality during the past decade have not been entirely straightforward and unambiguous. Thus, the level of IMR in the Republic of Ingushetia during 2006 (31.4 ‰) almost exceeded the indicator of the previous year by a quarter. After that, a sharp decrease of the indicator value started, which reached its minimum value by 2009 (11.5 ‰). Then during the next three years the infant mortality in the republic was in a relatively stable state (12.8 ± 0.3 ‰ in 2010-2012). But a new growth of IMR began since 2013, when it first made 13.9 deaths among the children before the 1st year of life in terms of 1000 children born alive, and in 2014 it made 14.2 pro mille.

With this trend, the other areas of the North Caucasus Federal District, with the exception of the Stavropol Territory, are characterized by mortality rate decline (Figure 5).

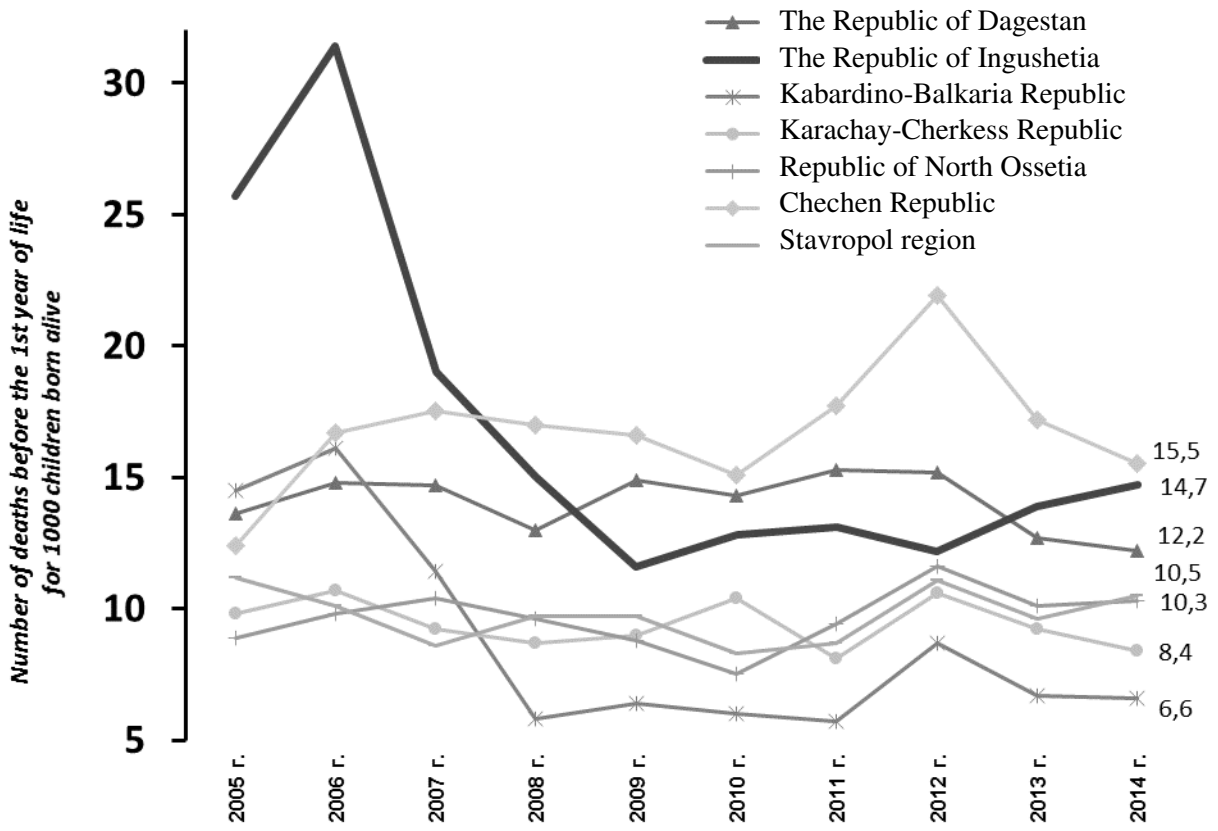

Fig. 5. IMR on the territories of the North Caucasus Federal District during 2005-2014

Since the late 2000-ies, with the restoration of statistics for the Chechen Republic, this territory "bypassed" similar IMR (19.5 ± 2.4‰) similar IMR (12.9 ± 1.3 ‰) and made (19,5 ± 2,4‰) and today it is the Chechen Republic which has the the highest indicator in the region (in 2014 - 15.0 ‰). IMR in the Republic of Dagestan exceeded the infant mortality rate of RI in 2009-2012 (15,0 ± 0,2 ‰), and in the last two years it has decreased substantially to 12,3 ‰. The other subjects of the North Caucasus Federal District - the Karachay-Cherkess Republic, the Stavropol Territory, the Republic of North Ossetia (Alania) demonstrate the values of the infant mortality indicator, defined as the "average on the border with low" IMR (8.5-10.4 ‰ by 2014), and only Kabardino-Balkar Republic had a low value of this indicator (7.2 ± 1, 5‰) during 7-year period.

The differentiation of IMR indicators in the Republic of Ingushetia at the place of residence of the deceased testifies that the mortality rates of the children prior to their 1st year of life in urban areas of the republic, making 21.5 deaths per 1000 live births on average in 2005-2014, were higher than in rural areas, where IMR indicators made 13.4 ppm on the average.

At the same time, it should be noted that the higher level of infant mortality rate in cities is not typical for modern Russia (Figure 6) as compared to rural areas, where the opposite situation is observed - the level of IMR in rural areas of Russian Federation was 23-30% higher than in the city during 2005-2014. For the North Caucasus region, this is quite common, when IMR in urban areas prevails over rural one, although it is not so pronounced as it happens in RI.

Moreover, if during the last decade, during the years of infant mortality rate decline in the Republic of Ingushetia (2007-2009 and 2012), the difference between the urban infant mortality rates and rural ones was only 1.3-1.6 times, when the minimum value of IMR was noted in the Republic of Ingushetia was noted (2009) the urban level already exceeded the similar rural level by almost 2 times, while this was due to the female subpopulation. But the new increase of IMR, which began during the previous (2013), made men the leaders by this indicator in the prevailing urban mortality of children prior the first year of their life over the rural one in 2014.

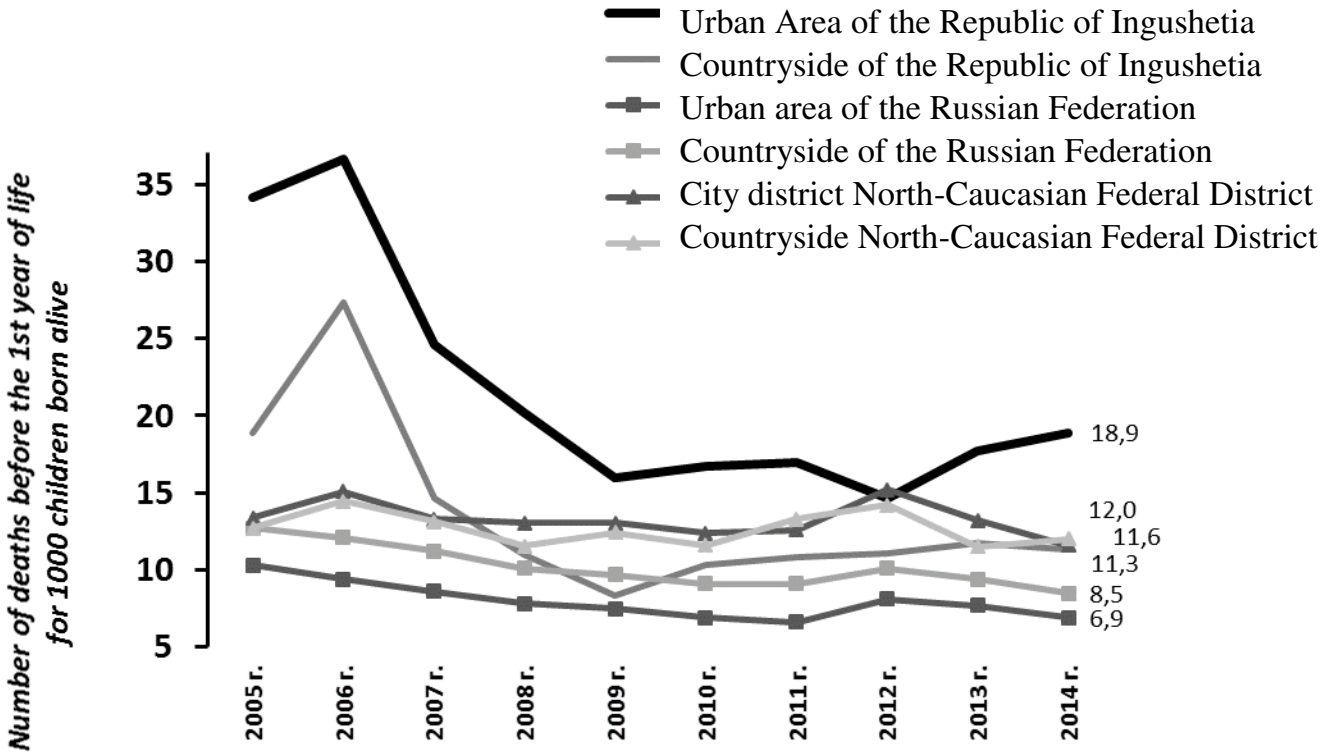

Fig. 6. IMR in urban and rural areas of the RI, the North Caucasus Federal District and RF during 2005-2014

The differentiation of IMR by sex indicates that among the male subpopulation during the years of decline, this indicator is not so different from the female subpopulation, but during the years of infants' death growth it exceeded it by 1.5-1.7 times and, in many cases, provided the increase of IMR in general.

CONCLUSIONS:

1. The infant mortality rate in Ingushetia, which was the part of the Chechen-Ingush ASSR during the Soviet period, is the highest in the North Caucasus region by the 1980-ies. At the beginning of the newest period of Russian history, by the time of the territorial isolation of the Republic of Ingushetia in 1993, the high level of death among the children prior to the first year of their life (28.8 ± 8.5 ‰) practically dropped the republic by half a century ago in terms of this indicator. At the same time, IMR in Ingushetia during the mid-2000s exceeded the average indicators for the North Caucasus Federal District by 1.6-2.1 times, and by 1.8-3 times in RF.

2. From the middle of the first to the middle of the second decade of the 21st century, the Republic of Ingushetia experienced a one-and-a-half-fold decrease of the infant mortality rate, from 25.7 deaths (prior to 1 year of their life) among 1000 children born alive in 2005 to 14.2 in 2014 (or by 44.7%), however, these changes did not occur in a straightforward and an unambiguous manner. The level of IMR in the Republic of Ingushetia in 2006 (31.4 ‰) almost exceeded the indicator of the previous year by a quarter, after which the sharp decrease of the indicator value started and reached its minimum value by 2009 (11.5 ‰), then the infant mortality was in a relatively stable state for the next three years (during 2010-2012 - 12.8 ± 0.3 ‰), and since 2013 a new increase of IMR began, when it first amounted to 13.9 and to 14.2 ppm by 2014.

3. The growth trend of infant mortality in Ingushetia differs from the general trend towards this indicator decrease among other territories of the North Caucasus Federal District, except for the Stavropol Territory. Due to the restoration of statistics on the Chechen Republic, this territory "bypasses" the IMR of RI (12.9 ± 1.3 ‰) which makes (19.5 ± 2.4 ‰) since the late 2000-ies. The indicators for the Republic of Dagestan, exceeding the infant mortality rate in RI during 2009-2012 (15,0 ± 0,2 ‰), became lower than in Ingushetia during the last two years.

4. The mortality rates among children under the first year of life in the urban area of the republic (21.5 ‰ on the average) are higher than in rural areas (13.4 ‰) during 2005-2014, which is unusual for modern

Russia, where the opposite situation is observed.

5. During the years of infant mortality decrease in the Republic of Ingushetia (2007-2009 and 2012), the difference in the indicators between urban and rural areas made 1.3-1.6 times, and during the year of the minimum IMR value (2009) the difference was almost 2 times. This is due to the female subpopulation. A new increase of IMR by 2014 within the prevalence of the death rate among the children, who died prior to 1 year of their life, in cities over rural areas made men to occupy the first place. IMR representatives among the male subpopulation were little different from those of the female subpopulation during the years of decline, but during the years of IMR increase, they exceeded them by 1.5-1.7 times, which in many ways ensured the growth of the indicator as a whole.

SUMMARY:

During the study of the infant mortality rate dynamics in the Republic of Ingushetia, the tendency to its decrease has been found, but in the last years of the analyzed period there has been a slight increase of this indicator, which differs from the general trend towards the decrease of this indicator among other territories of the North-Caucasian FD, except for the Stavropol Territory.

The results of this study prove the need for a deeper study of infant mortality problem in the Republic of Ingushetia and the search for effective methods of its reduction.

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