

## ORGANIZATION OF HEALTHCARE, MEDICAL SCIENCE AND EDUCATION

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### Demographic and Health Indicators of the Obstetric Service of the Republic Sakha (Yakutia)

#### ABSTRACT

The article presents an analysis of demographic and health indicators of the obstetrics service in the Sakha Republic (Yakutia) in the light of the development of optimal schemes of pregnancy and childbirth routing. Problems, similar to the problems of our northern region, are very relevant and marked in all countries of the circumpolar region; in recent years they are discussed at the international level within the circumpolar congress.

**Keywords:** birth rate, infant mortality, maternal mortality, Republic Sakha Yakutia).

#### INTRODUCTION

This study was carried out in the Republic Sakha (Yakutia), which occupies the largest territory in Russia and refers to the territories in the far North of the country with low population density.

The Republic of Sakha (Yakutia) is the subject of Russia, by its natural and spatial conditions unparalleled on our planet. The Republic is situated in the North-Eastern part of the Eurasian continent, the total area of the continental and insular (Island Lyakhovsky, Anjou and De long, members of the Novosibirsk Islands of the Arctic Ocean) territory of Yakutia is 3.1 million sq. km. Over 40% of the territory is above the Arctic Circle.

According to the national population census conducted in 2010, the permanent population of the Republic Sakha (Yakutia) (Yakutia) was 958.5 thousand people, of whom 466 492 – Yakuts, 353649 – Russian, 21008 – Evenki, 15071 – Evens, 1281 –Yukaghir, 1906 – the Dolgans, 670 - Yukaghir. The results of the census show that the country has not retained the status of a region of one million people. In the previous census of 1989 the population of the Yakutia was 1094.1 thousand people.

The formation of specific life support systems of the population in the far North contributes to the large number of sparsely populated settlements, located at a considerable distance, both administrative and medical centers, as well as a fairly weak and difficult at the same time the development of modern transport infrastructure. The main problems of the organization of the

health system of the Republic Sakha (Yakutia) as a whole are due to territorial characteristics. It is the presence of small-size medical institutions to ensure the availability of medical care; high demand for emergency medical, including specialized and sanitary-aviation assistance in the organization of on-site medical care, both primary and specialized; high level of hospitalization of the population (Borisov, E. E., 1990, Bannikov V. R., 1995, Alexandrov V. L., 2003, Lyskovic A. Cs., 2004). This dictates the need to develop differentiated regional mechanisms for the implementation of public health policy and health development in the Russian Federation.

In 2002 the Law of Republic of Sakha (Yakutia) № 429-II "On the list of hard-to-reach and remote areas in the Republic of Sakha (Yakutia)" was legislated. In the list of remote and hard-to-reach areas there were 29 of the 34 districts in which there are 169 settlements, 15 urban settlements, 233 village and township, 163 production site. Territorial remoteness and scattered settlements (e.g., in the Verkhoyansk district, settlement Suoardakh is at the distance of 402 km. from the center of the area; in Kobjajsky settlement Seban-Quel – 460 km. etc.), underdevelopment of the transport infrastructure in the period of spring flood and the mud most of the settlements on 4-5 months of being cut off from communication ground (water) transport – all these factors significantly affect the organization of medical care, emergency assistance features. Thus, the planned and emergency Advisory medical aid to the population, especially children and pregnant women, the Far North of the Russian Federation is associated with significant difficulties (Borisov E. E., 1990, Bannikov V. R., 1995, Alexandrov V. L., 2003, Lyskovic A. Cs., 2004, Tyrylgina M. A., 2008, Chichahov D. A., 2010, 2011, Duglas N. And., 2011, Samsonova M. I., 2013).

In this regard, the analysis of data of official medical statistics of the service delivery is the basis for development of adequate regional mechanisms for improving the quality of medical care to pregnant women, new mothers and newborns in the Republic Sakha (Yakutia).

## **MATERIALS AND METHODS**

We analyzed data of official medical statistics of obstetric service in the Republic Sakha (Yakutia), 2003-2014.

## **RESULTS**

According to the national census, conducted in 2010, the resident population of the Republic Sakha (Yakutia) totaled 949.4 thousand people, of whom: 466,492 - Yakuts, 353,649 - Russian, 21,008 - Evenki, 15,071 - Evens, 1,281 - Yukagirs, 1,906 - Dolgan, 670 - Yukagirs. As of 01.01.2015, the population of the republic is 956.8 thousand people, including 491,349 female population, including 248,115 - women of childbearing age, teenage girls - 18,793, 106,232 - girls (Table 1). Thus, the Yakutia has not retained the status of the region of a million people. One of the features of the Republic of Sakha (Yakutia) is a historically large proportion of the rural

population in the total number of inhabitants (35.8% with an average - 8% in other northern regions of Russia). And in rural areas predominantly indigenous population - the Yakuts, and a traditional lifestyle, indigenous peoples of the North: Evens, Evenki, Chukchi, Yukagir, Dolgan.

**Table 1**

**Dynamics of the population of the Republic of Sakha (Yakutia)**  
**(Samsonova M.I., 2013, Gov. Report on the health status of Sakha (Yakutia), 2010;**  
**Government Report on the health status of Sakha (Yakutia), 2014)**

Incidence	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total population, thousand pers.	948,6	949,0	950,7	949,9	950,0	951,4	949,8	949,4	958,0	955,5	955,6	954,8	956,8
Urban population, thousand pers.	611,1	613,3	610,8	610,0	613,1	619,5	621,7	622,2	614,4	620,5	620,5	622,7	624,7
Rural population, thousand pers.	337,5	335,7	339,9	339,9	336,9	331,9	328,1	327,2	343,6	335,0	335,1	332,1	332,2

In the Republic of Sakha (Yakutia) Obstetric Service is represented by the following medical institutions: 30 maternity units in the central district hospitals, 6 urban maternity wards and perinatal center in the city of Yakutsk. Total 379 hospital beds for pregnant women and mothers, 408 - pregnancy pathology beds, 503 - bed for gynecological patients. Of obstetricians - 5.0 per 10,000 female population. Provision of obstetric beds - 31.2 per 10,000 women of childbearing age.

The birth rate in the Republic of Sakha (Yakutia), and is relatively stable in recent years higher than in the Russian Federation (Russian Federation) (Table. 2). So, in 2013- 16704 baby was born, in 2014 - 17074. Traditionally, in the Republic of Sakha (Yakutia), the birth rate in rural areas is higher than cities, during the decade under study, this trend continues. The highest fertility rates in 2014. in rural areas reached 24,3 % in Zhigansky area and 26,7 % in mountain areas and the lowest rates - in the cities: 11,7 % in Neryungri, 16,1 % in Yakutsk.

**Table 2**

**The dynamics of the birth rate in the Republic of Sakha (Yakutia)**  
**(Samsonova M.I., 2013, Gov. Report on the health status of Sakha (Yakutia), 2010;**  
**Government Report on the health status of Sakha (Yakutia), 2014)**

Incidence of birth rate	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Yakutia, per 1000	15,0	15,5	14,3	14,4	16,1	16,2	16,8	16,8	17,1	17,5	17,5	17,8
Urban	14,5	15,0	13,8	14,1	15,1	16,0	16,7	16,5	15,6	16,6	15,5	15,3
Rural	15,8	16,3	15,0	14,8	17,5	16,0	16,7	17,4	19,9	19,9	21,1	22,4
Russia, per1000	15,0	15,5	10,2	10,4	11,3	12,1	12,4	12,5	12,6	13,3	13,2	13,3

Analysis of the total fertility rate has shown once again that it is in the village at 1 woman falls on the kind of 2-3. So, in 2013 in urban areas - 1.78; in rural areas it was 3.15 (tabl. 3). The index of total fertility rate of 3.15 is enough replacement level. Thus, in rural areas the fertility rate is still sufficient for a simple replacement of generations of parents to children. For comparison, in Russia the same period amounted to 1.75 in 2014.

**Table 3**

**Dynamics of the total fertility rate in the Republic of Sakha (Yakutia)**  
**(Samsonova M.I., 2013, Gov. Report on the health status of Sakha (Yakutia), 2010;**  
**Government Report on the health status of Sakha (Yakutia), 2014)**

Total fertility rate	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Yakutia	1,87	1,91	1,73	1,72	1,91	1,90	1,97	2,00	2,06	2,17	2,17	2,25
Urban	1,66	1,71	1,58	1,61	1,72	1,82	1,88	1,86	1,77	1,89	1,78	...
Rural	2,35	2,36	2,01	1,97	2,31	2,08	2,18	2,30	2,68	2,81	3,15	...
Russia	-	-	-	-	-	-	-	-	1,58	1,69	1,71	1,75

In the Republic Sakha (Yakutia), according to official statistics in the dynamics of the number of births increased substantially and accordingly, in comparison with 2003 (more than 2-fold) increased number of normal births. So, if in 2003 the proportion of normal births was only 28.8%, while in 2013, 16,578 births, of which 9136 normal deliveries (55.1%), in 2014g.-16948, including normal childbirth - 8971 (52.9%) (Table 4). This is the result of good management of pregnant women in hospitals of the country.

**Table 4****Dynamics of births in the Republic of Sakha (Yakutia)****(Samsonova M.I., 2013, Gov. Report on the health status of Sakha (Yakutia), 2010;****Government Report on the health status of Sakha (Yakutia), 2014)**

Incidence	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
the number of births	14171	14613	13656	13610	15147	15192	15848	16109	16402	16998	16578	16948
the proportion of normal births, %	28,8	37,7	42,8	43,9	50,5	50,1	48,8	50,0	46,5	52,3	55,1	52,9

The maternal mortality rate in the country for the period 2003-2014 was not stable. In 2014 index excluding late maternal mortality rate has increased by 1.6 times to 18.0 per 100 thousand live births (3 cases) in 2013. to 29.4 (5 cases) in 2014. (table 5).

Table 5

**Trends in maternal mortality**  
**In the Republic of Sakha (Yakutia) (100 thous. Live births)**  
**(Samsonova M.I., 2013, Gov. Report on the health status of Sakha (Yakutia), 2010;**  
**Government Report on the health status of Sakha (Yakutia), 2014)**

Incidence of maternal mortality	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Yakutia	56,2	47,6	22,1	36,6	26,2	19,5	12,5	24,8	12,2	29,4	18,0	29,4
Russia	31,9	23,4	25,4	23,6	22,0	20,7	22,0	16,5	16,2	11,5	11,3	10,8

In the Republic of Sakha (Yakutia) maternal deaths mainly occur in Level II hospitals - 62.5% and Level I - 37.5%. It obstetrics Level I and II have underestimated the severity of the condition, which leads to the development of critical condition. The causes of maternal mortality rate of 61.5% was driven causes such as haemorrhage, sepsis, eclampsia. Also, in the structure of the reasons for the development of severe obstetric complications, 61.5% were controlled by cause (severe preeclampsia, bleeding).

Infant mortality according to 1940 of Tatarstan amounted to 237.4 ‰ (State Statistics Committee of Russia, 1998). During the study period 2003-2014 there is a dynamic decrease in the infant mortality rate. So, in 2014 the figure was 8.0 per 1,000 children born alive, as in the whole of Russia, this indicator reached the level of 7.4 (tabl. 6).

Table 6

**Trends in infant mortality in the Republic of Sakha (Yakutia)**  
**(per 1,000 live births)**

(Samsonova M.I., 2013, Gov. Report on the health status of Sakha (Yakutia), 2010;  
Government Report on the health status of Sakha (Yakutia), 2014)

Incidence of infant mortality	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Yakutia	13,2	13,5	10,6	10,6	10,4	9,1	8,9	7,2	6,3	9,6	9,6	8,0
Russia	12,4	11,6	11,0	10,2	9,4	8,5	8,1	7,5	7,3	8,6	8,2	7,4

A significant contribution to infant mortality, still, makes neonatal mortality ( $60,3 \pm 7,1\%$  of the total number of cases). Most of the children ( $44,0 \pm 7,8\%$ ) die in hospitals,  $33,4 \pm 3,9\%$  of babies dying in children hospitals, the death rate in the third place at home -  $17,8 \pm 4,4\%$ .

The structure of the causes of neonatal mortality for the 2003-2014: the first place is occupied by conditions originating in the perinatal period -  $75,7 \pm 5,4\%$  of cases, followed by congenital malformations -  $21,2 \pm 5,4\%$  cases. In analyzing the conditions arising in the perinatal period, which were the cause of neonatal death, revealed that the respiratory distress syndrome was the leading cause of mortality in second place - hyaline membrane disease, in third place - intrauterine pneumonia.

Among the conditions arising in the perinatal period and the cause of death of newborns in the first week of life, the first place in the Republic of Sakha (Yakutia) took the newborn respiratory disorders. Every year hospitals Yakutia die from this cause  $43,7 \pm 4,8\%$  of all deaths of newborns. The second place ranking for all the studied decade belongs to deaths in hospital as a result of asphyxia and hypoxia. According to the frequency of occurrence of a diagnosis there are no differences in rural and urban areas. This figure, of course, refers to the controllable causes of neonatal mortality and entirely dependent on the skill of midwives and choosing the right tactics of childbirth. The third place ranking in frequency of deaths at the hospital takes intrauterine pneumonia ( $17,6 \pm 2,5\%$ ), the frequency of this diagnosis in rural hospitals in 2 times higher than the republic-wide performance.

Thus, data on infant mortality in the Republic of Sakha (Yakutia) confirm their high preventability means of modern medicine, as well as the introduction of adequate routing schemes pregnancy and childbirth during transport from remote, inaccessible villages.

## CONCLUSION

According to official health statistics Republic of Sakha (Yakutia) for the 11-year period regional peculiarities of health and demographic indicators obstetric service of the Republic of Sakha (Yakutia) are accounted:

- A consistently high birth rate
- Relative increase in the proportion of normal births
- Reducing maternal mortality
- Reduction of the infant mortality rate.

The findings suggest the need to implement adequate routing schemes pregnancy and childbirth during transport from remote, difficult to access areas that will improve the quality of essential health care maternal and neonatal.

Problems similar to those of our northern region, marked in all countries of the circumpolar region of the world and in recent years as part of the Circumpolar Congress discussed at the international level, it is very important to share experiences and develop joint international programs and protocols for pregnant women in the circumpolar countries.

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