

**ORIGINAL RESEARCH**

**Health and health status of children in Serbia and the desired  
Millennium Development Goals**

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## **Abstract**

**Aim:** Children represent the future, and ensuring their healthy growth and development should be a prime concern of all societies. Better health for all children is one of the leading objectives of the National Plan of Action for Children and a key element of the tailored Millennium Development Goals for Serbia.

**Methods:** Our analysis was based on relevant literature and available information from the primary and secondary sources and databases. We analyzed health status of children that can be illustrated by indicators of child and infant mortality, morbidity, and nutritional status.

**Results:** There has been a significant reduction in the mortality rates at the national level, particularly with regard to infants and children under five years of age. However, the current mortality rate of Roma children is still three times as high as the Millennium Goal set at the national level for Serbia. Most deaths of children under the age of five are due to preterm birth complications, congenital anomalies, birth asphyxia and trauma, pneumonia and sepsis. The rate of malnourished children among the poor and in Roma settlements is twice as high as in the general population of Serbian children. A growing number of obese children was also noted in the Roma population.

**Conclusion:** Political awareness, commitment and leadership are required to ensure that child health receives receive the attention and the resources needed to accelerate the progress of Serbia.

**Keywords:** children, health status, Millennium Development Goals, Serbia.

**Conflicts of interest:** None.

## **Introduction**

A comprehensive understanding of the children's and women's health as a state of complete physical, mental and social wellbeing (1) is essential to the health of current and future generations. Almost every culture holds that a society has a responsibility to ensure a nearly equal start in life for children, which implies developing their full health potential (2). However, there are still significant ethnical and regional differences that need to be considered while developing the global health policy framework. The differences in people health are determined by their exposures to health risks, which are, in turn, the social determinants of health (3). The prevention of disease requires overall investment in the social determinants of health and reduction of inequalities and unfairness in health.

The foundations for adult health and, indeed, the health of future generations are laid in early childhood and even before birth. Therefore, better health for all children is one of the leading objectives of the National Plan of Action for Children (4) and a key element of the tailored Millennium Development Goals for Serbia.

Progress in the reduction of child mortality is one of the leading public health challenges in all countries (1). Reducing child mortality is also one of the Millennium Development Goals, and the first of the total of 27 goals adopted at the World Summit for Children. It has also been incorporated into many national plans of action for children. In spite of major improvements, national reports on progress in attaining the Millennium Development Goals, even in countries in which child mortality has been reduced by two thirds on the average, highlight that the problem is still present in rural areas, among people living below the accepted poverty line and – as regards Southeastern Europe – in particular, among Roma subpopulations (1,5). Child mortality due to preventable causes is further compounded by poverty, unfavorable living conditions, low educational level of mothers, social exclusion, neglect, violence against children and insufficiently accessible antenatal and postnatal health care (6,7). Deaths among children under the age of five years represent one of the most serious challenges currently faced by the international community. To address this challenge, it is necessary to measure accurately the levels and causes of mortality among this population group (8). Major causes of under-five mortality remain the same globally; their relative importance varies across regions of the world. While in low-income countries infectious diseases account for a large proportion of under-five deaths, the main killers of children in high-income countries are non-communicable diseases such as congenital anomalies, prematurity, injuries and birth asphyxia (9). Monitoring of the nutritional status plays an important role in the analysis of the health of children, particularly when health risks and preventive actions need to be assessed and considered. Irregular and insufficient nutrition during infancy and later can significantly impair the growth and development of children and have adverse health effects (physical fitness, mental functions, immune system). At the same time, excessive food intake and an imbalanced diet may also result in obesity and negative health consequences (10).

The aim of our study was to analyze children mortality rates in Serbia, leading causes of death, differences in mortality rates between the average population of children and Roma children and diet and nutritional status of children under the age of five years.

## Methods

This situation analysis has been done on the basis of relevant literature and available information from the following primary and secondary sources and databases:

- Published documents including strategies, policies, programs, plans, laws and other regulations of the Government of the Republic of Serbia, health regulations and guidelines of the Ministry of Health, published reviews, scientific and professional articles on health and health status of the Serbian population in national and international journals, national surveys and project reports of international organizations (UNICEF, WHO, EU, World Bank) that deal with issues of children's and women's health in Serbia;
- Publications in the area of routine health statistics, national e-databases (Institute of Public Health of Serbia, Dr. Milan "Jovanović Batut", Statistical Office of the Republic of Serbia and international e-databases (WHO/Eurostat) for comparison purposes.

This statistical information often is only available in aggregated sets of data which do not allow for detailed analyses.

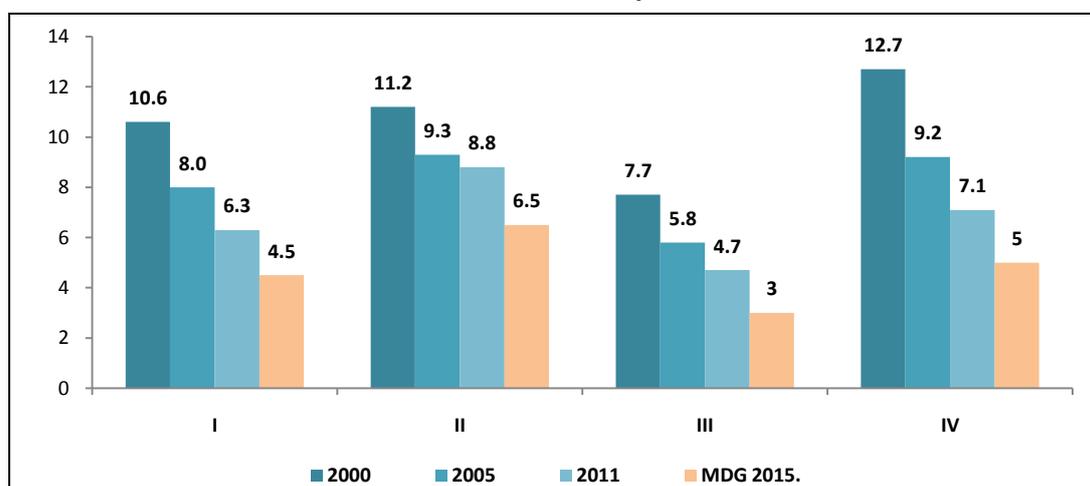
Health outcomes and health status of children are illustrated by the following indicators: infant mortality rate (deaths of children in the first year of life), perinatal mortality rate (fetal deaths from the 22<sup>nd</sup> week of gestation or achieved 1000g in intrauterine development and deaths by the seventh day of life), neonatal mortality rate (deaths in the first 27 days of life only), and morality of children under five years of age (deaths before children turn five years); morbidity, nutritional status and comparisons with relevant national and international benchmarks and objectives. A special focus was placed on disparities and social inequalities in health among population groups within Serbia, which are considered unfair, unjust, avoidable and unnecessary.

The results were presented in tables and graphs.

## Results

In Serbia, there has been a significant reduction in the mortality rates at the national level, particularly with regard to infants and children under five (Figure 1), while the reduction of the mortality rate in the prenatal period was somewhat more limited.

**Figure 1. Children mortality rates in Serbia: Situation analysis and the desired Millennium Goal by 2015**



I-infant mortality rate; II-perinatal mortality rate; III-neonatal mortality rate; IV-children under 5-year mortality rate.

Mortality among Roma children remains high, the rate has almost halved over the last five years bringing the number closer to the national Millennium Goal of reducing Roma under-five child mortality to 14 and infant mortality to 12. However, the current mortality rate of Roma children is still three times as high as the Millennium Goal set at the national level for Serbia (Figure 2).

**Figure 2. Differences in mortality rates between the average population of children and Roma children in 2005 and 2010 in Serbia**

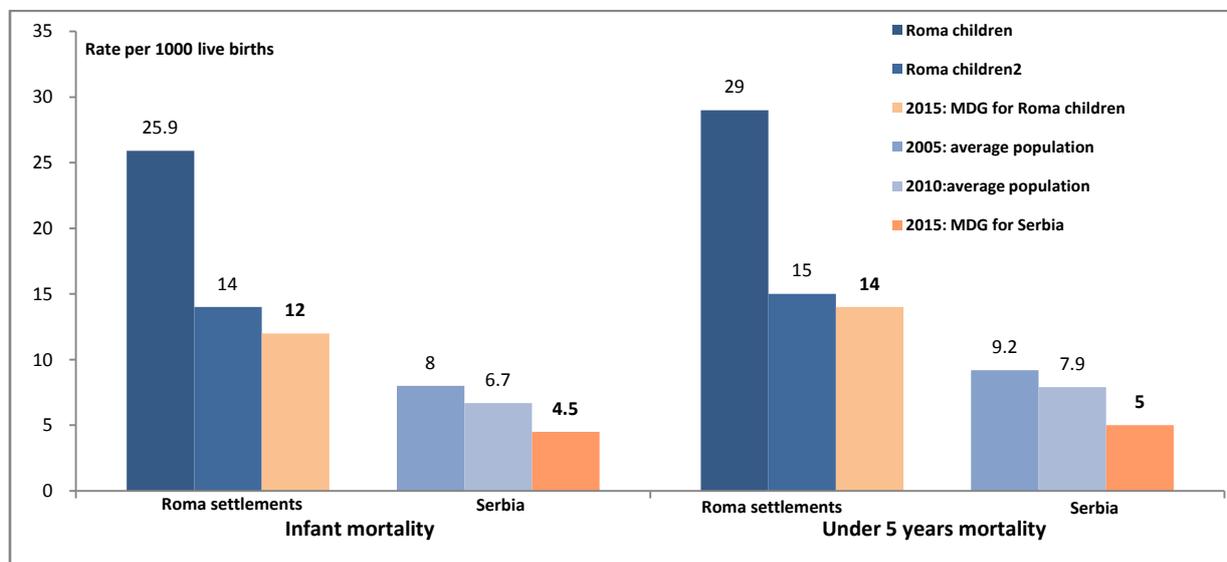
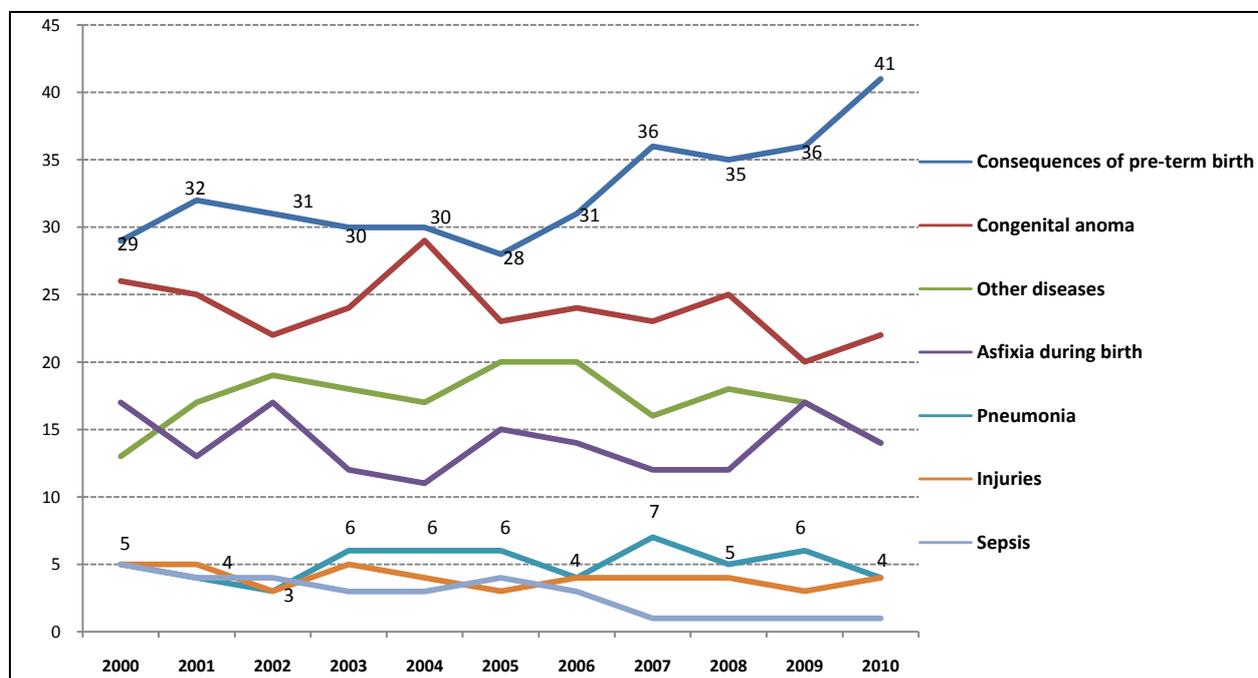


Figure 3 presents the leading causes of death in Serbian children under-five years. Most deaths of under-five children are due to preterm birth complications, congenital anomalies, birth asphyxia and trauma, pneumonia and sepsis.

**Figure 3. Distribution of the leading causes of death of children under-five in Serbia**



The indicators of diet and nutritional status of children under-five years of age are presented in Table 1. The rate of malnourished children among the poor and in Roma settlements is twice as high as in the general population of Serbian children. Surprisingly, a growing number of obese children were also noted in the Roma population, from 6.7% to 12.8%, which points to irregular nutrition. The corresponding Millennium Development Goal in Serbia aims to bring the share of obese children down to 9.1% by 2015. Breastfeeding habits have not substantially changed, except in the Roma population where the number of exclusive breastfeeding up to the age of six months has decreased. The rate of exclusive breastfeeding is still only half of the desired Millennium Development Goal in Serbia (30% of exclusively breastfed children from birth until the six month of age).

**Table 1. Diet and nutritional status of children under five years of age in 2005 and 2010 in Serbia**

Indicator	Serbia		The poor		Roma settlements		MDG
	2005	2010	2005	2010	2005	2010	2015
Live births with low birth weight	4.9	4.8	8.6	8.3	9.3	10.2	
Percent of children first breastfed within a day after birth	68.8	61.9	71.7	69.1	72.5	70.3	
Percent of children with exclusive breastfeeding for the first six month	14.9	13.7	15.4	19.5	18.0	9.1	30.0
Percent of children 6-23 months who receive the minimum number of meals	Na	84.3	na	80.0	na	71.9	
Prevalence of malnourishment among children under-five (body weight for the given height $\leq$ -2SD)	3.2	2.3	3.8	5.2	4.1	5.2	
Prevalence of obesity among children under-five (body weight for the given height $\leq$ -2SD)	15.6	12.7	15.5	12.5	6.7	12.8	9.1

## Discussion

This situation analysis covers the health status of Serbian children that can be illustrated by indicators of child and infant mortality, morbidity and nutritional status which are compared with relevant national and international benchmarks and objectives. A special focus was placed on disparities and social inequalities in health among population groups within Serbia, which are considered unfair, unjust, avoidable and unnecessary since they open a systematic burden on vulnerable population groups. It is believed that the unfair differences in health of children result from social structures and political, economic and legal relations: they are derived from the system, and are result of the social system (so that they can be changed) and they are unjust (11). Marmot insists that they are not a natural phenomenon by any means; instead, they are a combination of poor conditions and low standards of living, poverty, risky life-styles, social exclusion, scarcely formulated, inappropriate health programs and sometimes toxic national and local policies (12).

Infant mortality is generally regarded as a basic indicator of population health and a measure of long-term consequences of perinatal events. This parameter is particularly

important for monitoring and assessing health outcomes in high risk groups such as pre-term children and children with developmental difficulties. Trends show that Serbia has made significant progress towards the Millennium Development Goal relating to infant mortality (13,14).

An analysis of routine statistical data, although infant mortality is still above the European Union–27 average (for example, in 2010, the EU-27 infant mortality average was 4.1 vs. 6.7 in Serbia), suggests that Serbia may achieve the proposed national Millennium Goals in 2015: an infant mortality rate of 4.5 and an under-five mortality rate of 5 per 1000 live births. Earlier comparisons of infant mortality revealed rates in Serbia two times higher than the EU rates, but this difference has been substantially reduced to date (15,16).

Recent studies conducted by UNICEF and other organizations indicate that the majority of the Roma population face social disadvantage and exclusion, and most of them live in poverty (17). Many Roma individuals are also unemployed, have limited education, as well as insufficient access to information, which combined with a lack of trust in institutions often prevent them from using healthcare services in case of need. The Multiple Indicator Cluster Surveys (MICS), which have been conducted periodically in Serbia since 1996 with the help of UNICEF, have been extremely valuable in gaining a better understanding of the challenges involved. From 2005, these surveys have provided assessments of child mortality in the Roma population using the *Brass* method for estimating child mortality taking into account the risk of death to which the children are exposed to (18). Although mortality among Roma children remains high, the rate has almost halved over the last five years bringing the number closer to the national Millennium Goal of reducing Roma under-five child mortality to 14, and infant mortality to 12. However, the current mortality rate of Roma children is still three times as high as the Millennium Goal set at the national level for Serbia (15).

According to the World Health Organization, most deaths of children under the age of five years are due to a small number of diseases and conditions. Forty-three per cent of these deaths occur among babies aged 0-28 days (newborns) and are mainly due to preterm birth complications, birth asphyxia and trauma, and sepsis. After the first 28 days until the age of five years, the majority of deaths are attributable to infectious diseases such as pneumonia (22%), diarrhoeal diseases (15%), malaria (12%) and HIV/AIDS (3%) (8,9).

While international efforts to address mortality among children under the age of five have resulted in significant reductions globally, persistent inequities between and within countries exist. These are not only driven by poverty, but are intrinsically linked to social exclusion and discrimination. Therefore, continued efforts to eliminate under-five mortality must take into consideration both direct causes and underlying determinants. This requires a comprehensive and holistic approach, which must explicitly recognize human rights' standards as essential and integral elements.

Also, poor nutritional status in children is strongly correlated with vulnerability to diseases, delayed physical and mental development, and an increased risk of dying. While, between 1990 and 2011, the proportion of children under the age of five years who were underweight declined by 36%, under-nutrition is still estimated to be associated with 45% of child deaths worldwide. In 2011, there were 165 million children under the age of five years who were stunted, and 52 million who were wasted (10,19,20). Low birth weight is closely associated with increased risks of neonatal mortality, cognitive problems and chronic diseases in later life (20). Our

analysis shows that the national average share of live births with low birth weight (under 2,500 grams) has remained constant in Serbia in the last decade. The share of low birth weight is significantly higher for Roma and poor children.

More preventive approaches and consistent efforts for improvement are needed in Serbia, to ensure that child health receives the attention and resources needed and secure the benefits that children and families require.

Identifying the health outcomes that matter most for the children, and set out the contribution that each part of the health system needs to make in order that desired health outcomes are achieved, would be an effective way to reach progress.

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