

Maternal mortality in Serbia – revisited

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Summary

Purpose: The purpose of this investigation was to analyze maternal mortality in Republic of Serbia. *Materials and Methods:* Maternal mortality in Republic of Serbia was analysed in two periods, 2007-2011 and 2012-2016. Sources of data for this analysis were: Population statistics notices of Statistical Office of Serbia and Health Statistical Yearbooks of Republic of Serbia Institute of Public Health of Serbia "Dr. Milan Jovanovic Batut". *Results:* Maternal mortality ratio in Serbia, although relatively high, in the last six years shows a declining trend (from 14.9 in 2012 to 10.8 per 100,000 live births in 2016). *Conclusion:* To promote and preserve the health of women of childbearing age, it is necessary to insure greater social and economic security of all women, especially in the period of maternity, pro-natal policy of the state, and the protection of the family. A significant reduction in maternal mortality can be achieved by early diagnosis, prompt treatment, and rehabilitation after certain illnesses.

Key words: Maternal; Mortality; Serbia; Childbearing age.

Introduction

Maternal mortality refers to deaths of women from complications of pregnancy, childbirth, and puerperium (the first six weeks after delivery). The maternal mortality ratio is used as a more stable indicator, which monitors deaths per 100,000 live births. The most common complications that lead to maternal deaths are: infection, excessive bleeding after childbirth or abortion, and other complications of pregnancy - eclampsia postpartum, and sepsis [1]. Worldwide, more than 350,000 women die annually from complications during pregnancy and childbirth, 99% in developing countries [2]. Since 1990, the maternal mortality ratio has been nearly cut in half, and most of the reduction has occurred since 2000. More than 71% of births were assisted by skilled health personnel globally in 2014, an increase from 59% in 1990. In the developing regions, only 56% of births in rural areas are attended by skilled health personnel, compared with 87% in urban areas. Only half of pregnant women in the developing regions receive the recommended minimum of four antenatal care visits. Only 51% of countries have data on maternal cause of death.

Maternal survival has significantly improved since the adoption of the Millennium Development Goals (MDGs). The maternal mortality ratio dropped by 45% worldwide between 1990 and 2013. Many developing regions have made steady progress in improving maternal health, including the regions with the highest maternal mortality ratios. A key strategy for reducing maternal morbidity and mor-

tality is ensuring that every birth occurs with the assistance of skilled health personnel. Profound inequalities in access to and use of reproductive health services persist within and across regions. While high-income countries have been routinely generating such information for many years, the majority of low- and middle-income countries continue to struggle to produce high-quality statistics on cause of death.

The World Health Organization recommends a minimum of four antenatal care visits during pregnancy to ensure the well-being of mothers and newborns. As of 2014, on average only 52% of pregnant women in the developing regions received the recommended number of antenatal care visits during pregnancy.

Goal 5 brought a concentrated focus on efforts to reduce maternal deaths and ensure universal access to reproductive health. Significant progress has been made, but it fell far short of the global goal and targets. This leaves an unfinished agenda to ensure that all people receive comprehensive sexual and reproductive health services[3].

As in Serbia today? In the year 2000, along with 189 member states of the United Nations, Serbia adopted the Millennium Declaration that states the basic values which should be used as a foundation for international relations in the 21st century. The 5th MDG is: improving maternal health. As maternal health is indicator of quality of health-care of women of childbearing age (women aged 15 to 49 years), this is taken into account when adjusting the fifth MDG in the Republic of Serbia according to national development priorities and the existing national development

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strategies and regulations with the following tasks [4]: 1) reduce by three-quarters the maternal mortality ratio since 1990. by year 2015. For the Republic of Serbia until 2015, to reduce the maternal mortality ratio to 4.9. 2) By year 2015, preserve and improve women's reproductive health by maintaining the fertility rate at the current level, reducing the abortion rate by doubling the percentage of women using modern contraceptive methods. 3) To reduce mortality in the group of women of childbearing age by one-third between years 2000 and 2015.

Later, the United Nations defined Sustainable Development Goals as part a new sustainable development agenda [5]. This agenda was launched at the Sustainable Development Summit in September 2015, at the 193-Member United Nations General Assembly. Goal 3: ensuring healthy lives and promoting the well-being for all at all ages is essential to sustainable development. Regarding maternal health: maternal mortality has fallen by almost 50% since 1990. In Eastern Asia, Northern Africa, and Southern Asia, maternal mortality has declined by around two-thirds, but maternal mortality ratio in developing regions is still 14 times higher than in the developed regions. More women are receiving antenatal care, in developing regions; antenatal care increased from 65% in 1990 to 83% in 2012. Only half of women in developing regions receive the recommended amount of healthcare they need.

There are many problems in the quality of registration of maternal deaths, as reported sightings and an expert in the Republic of Serbia. It occurs that these deaths are registered under other cause, especially if the woman was diagnosed with some chronic health problems before pregnancy [6]. In some cases, registration under other causes of death can occur if death took place in another hospital in which admission was due to other medical complications. It is estimated that as many as 10% of maternal deaths occur after the 42nd day of delivery, in which case the death is not registered under the same cause, hence there is under-registration [7]. The main source of data on maternal deaths in Serbia is routine mortality data by cause statistics provided by Statistical Office of the Republic of Serbia [8]. Analysis of national practices of death certification and coding shows that maternal death is often coded to another ICD10 code (different than those defined as a maternal causes of death). Therefore, experts from the Statistical Office of the Republic of Serbia [8] and the Institute of Public Health of Serbia "Dr. Milan Jovanovic Batut" [9] developed a methodology for the verification of data on maternal mortality and their revision. Since 2007, these methodology include triangulation of data sources: death certificate, birth registration, and hospital discharge lists. Experts argue that even in countries with good vital registration systems, maternal mortality is actually higher by approximately 50%.

Materials and Methods

The authors analysed maternal mortality in Republic of Serbia in two periods, 2007-2011 and 2012-2016. Sources of data for this analysis were: population statistics notices of Statistical Office of Serbia and Health Statistical Yearbooks of Republic of Serbia Institute of Public Health of Serbia "Dr. Milan Jovanovic Batut".

Results

Based on comparisons of the five-year average at the start of the millennium period for monitoring of maternal health (1990-1994), with the five-year average based on the analysis performed in year 2005 (for period 2001-2005), it is evident that the maternal mortality ratio decreased significantly from 13.9 to 6.5, so it was considered realistic to reach the proposed national value of five maternal deaths due to complications of pregnancy, childbirth, and puerperium per 100,000 live births by year 2015. However, the ratio of maternal mortality Serbia showed a different trend than expected. The maternal mortality ratio in period 2007-2011 was: 2007-7.3, 2008-14.4, 2009-19.9, 2010-17.6, and 2011-9. The maternal mortality ratio in period 2012-2016 was: 2012-14.9, 2013-13.7, 2014-12.0, 2015-12.1, and 2016-10.8.

In the present population, causes of maternal mortality in period 2007-2011 were: hemorrhage (4), eclampsia (6), embolism (7), sepsis (8), influenza H₁N₁ (8), adult respiratory distress syndrome (4), acute heart failure (7), leukemia (1), and unknown cause (2) cases. In years 2009. and 2010. the highest maternal mortality ratio was recorded, and the main cause of death was influenza H₁N₁ with incidence of 28.5% and 33.3%, respectively.

Causes of maternal mortality in Serbia in period 2012-2016 were: hemorrhage (7), eclampsia (4), embolism (9), sepsis (5), adult respiratory distress syndrome (1), acute heart failure (8), leukemia (2), malignant melanoma (1), malignant breast tumor (2), malignant tumor of thymus (1), and unknown cause (1) cases. In year 2015, 50% of women (4 out of 8) died due to malignant diseases.

Discussion

In Serbia, the maternal mortality ratio, although relatively high, in the last six years shows a declining trend (from 14.9 in 2012 to 10.8 per 100,000 live births in 2016). Only 40% of women in reproductive period in Serbia regularly visit gynecologist for check up. The coverage of pregnant women in first trimester is about 60%, with average of 4.6 gynecological examinations and 2.5 ultrasound examinations. More than half of hospitalisations of women in Serbia are related to delivery and pathology of pregnancy.

The main cause of mortality in group of fertile women (24% of population) with incidence over 40% are malignant diseases, followed by cardiovascular diseases (21%), injuries, poisoning, and other external causes in 13% of cases.

Maternal mortality in Serbia for years is considered low and has been reduced to sporadic cases, as in most Western countries. The incidence of births that take place in the presence of trained health workers in the Republic of Serbia is very high, since 2002 more than 99% (up to 99.5% in 2005). Certain prerequisites for the reduction of maternal mortality are still unsatisfactory, such as coverage of antenatal women's healthcare. One of recent publications states that lack of long-term visions, commitment and comprehensive strategies, as well as the economic crisis, jeopardise achievements of MDGs in Serbia.

In 2005, the Government of the Republic of Serbia adopted the first MDG review, assessing progress and trends for each goal. In 2006, it set up a multisectoral task force to customize MDG targets and indicators to the specific needs and problems of the citizens. The process involved CSOs, professional organizations, the business sector, and the media. The task force developed the MDG Monitoring Framework for Serbia, whereby targets and indicators are aligned with national priorities, strategies, and legislation.

In 2012, Serbia was selected as one country, then 56 countries, in which national consultations about UN post 2015 Sustainable Development Goals were held. As concluded, there are no sufficient new data, neither available reliable sources for all indicators, but there is enough information to derive conclusions about main tendencies and critical gaps in achieving of MDGs. MDG 5: maternal and reproductive health is considered partially achieved. Promotion of women's health in the reproductive period does show some improvements, such as a reduction in mortality of women of reproductive age from all causes of death, as well as from cancer. Almost all childbirths are happening in the presence of a medical worker. Figures also show a reduction in the abortion rate and an increase in the use of modern contraceptive methods, although there are certain reservations related to a possible incomplete registration of abortions. Special attention should be paid to the continuously decreasing fertility rate and adequate health support to mothers [10]. Analysis of main components of reproductive health: fertility, safe motherhood, family planning, prevention of unwanted pregnancies, and abortions, as well as specific disease in women of childbearing period [11] is necessary.

Conclusion

Maternal mortality in Serbia for years has been reduced to sporadic cases, and maternal mortality ratio, although relatively high, in the last six years shows a declining trend. To promote and preserve the health of women of childbearing age, it is necessary to insure greater social and economic security of all women, especially in the period of maternity, pro-natal policy of the state, and the protection

of the family. A significant reduction in maternal mortality can be achieved by early diagnosis, prompt treatment, and rehabilitation after certain illnesses.

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