

Neonatal Mortality Trend at the University Clinic of Gynecology and Obstetrics- SKOPJE in the period of 2011-2017

Gabriela Bushinoska Ivanova¹, Jasna Bushinoska²,

¹ Clinical Center Mother Teresa-University Clinic of Gynecology and Obstetrics, Skopje, Macedonia

² Clinical Center Mother Teresa-University Clinic of Anesthesiology Reanimation and Intensive Care, Skopje, Macedonia

Abstract:

INTRODUCTION: Neonatal mortality is the percent of neonatal (infant) mortality of the live- born neonates per thousand live births, in the neonatal period from 0-28 days after delivery, or those born after 22 gestation weeks of pregnancy with birth weight more than 500 g. The neonatal mortality can be divided into early neonatal mortality, which covers the period of 0-7 days after delivery (168h), regardless of the stage of pregnancy, and late neonatal mortality that includes the mortality of live-born infants in 8 until before 28 days after delivery.

RESEARCH PURPOSE: The purpose of this paper is to show the percentage of neonatal mortality among live- born neonates at the UCGO-Skopje from 0-28 days after delivery, and the trends of movement of the mortality in the period 2011-2017 year.

MATERIAL AND METHODS: This retrospective analysis elaborates on neonatal mortality or mortality in live- born neonates in the period 0-28 days after delivery at the UCGO-Skopje, in the period of 7 years (from 2011 to 2017), in relation to the total number of births in that period. The data is collected from the Info Centre and the histories of the disease of women that gave birth and the newborns at UCGO-Skopje during this period.

RESULTS: During this period of 7 years at UCGO-Skopje, there were 36,733 live- born newborns, out of which 912 newborns died in the neonatal period after delivery, from 0-28 days after delivery. The results show that the number of early neonatal deceased newborns, 0-7 days after birth, is higher and is especially significant in the first 24 hours after delivery. The number of late neonatal deaths from 8 until before 28 days after delivery is also high. The total neonatal mortality of UCGO- Skopje in this 7 year period is 24.82 %, or 24.8 neonatal deaths in the neonatal period after delivery (0-28 days) per thousand live births. The highest neonatal mortality rate of 33.81% was recorded in 2017, while the lowest rate was 17.19 %, recorded in 2015.

CONCLUSION: The neonatal mortality rate in Macedonia is quite high, higher than in the countries in our surroundings, the Balkan countries and the mid- developed countries of the world.

Keywords: neonatal mortality, early neonatal mortality, late neonatal mortality, Macedonia.

Date of Submission: 07-05-2020

Date of Acceptance: 21-05-2020

I. Introduction

Neonatal mortality is the percent of neonatal (infant) mortality of the live- born neonates per thousand live births, in the neonatal period from 0-28 days after delivery, or those born after 22 gestation weeks of pregnancy with birth weight more than 500 g. [1]. The neonatal mortality can be divided into early neonatal mortality, which covers the period of 0-7 days after delivery (168h), regardless of the stage of pregnancy, and late neonatal mortality that includes the mortality of live-born infants in 8 until before 28 days after delivery [2]. Globally, the neonatal mortality rate fell from 33 deaths per 1,000 live births in 1990 to 20 in 2013, and the number of neonatal deaths declined from 4.7 million in 1990 to 2.8 million in 2013 [3, 4]. Two regions account for almost 80 per cent of the newborn deaths in 2016 – Southern Asia accounted for 39 per cent of all such deaths and sub-Saharan Africa accounted for 38 per cent [5]. A child in sub-Saharan Africa or in Southern Asia is nine times more likely to die in the first month than a child in a high-income country. Across countries, neonatal mortality rates ranged from 46 deaths per 1,000 live births in Pakistan to 1 each in Iceland and Japan [6].

Highly developed countries have low neonatal mortality rates. Macedonia falls in the category of the middle-income countries, but according to the number of neonatal mortality it is getting closer to the less developed countries and developing countries. The neonatal mortality rate in Macedonia is quite high, higher than in the countries in our surroundings, the Balkan countries and the mid- developed countries of the world and was 10.5 % in 2017 year [7]. The purpose of this paper is to show the percentage of neonatal mortality among live- born neonates at the UCGO-Skopje from 0-28 days after delivery, and the trends of movement of

the mortality in the period 2011-2017. UCGO- Skopje is the largest and most relevant perinatal center in the country, where complicated pregnancies and newborns with complications due to preterm birth, immaturity, anomalies and other factors that can lead to increased neonatal mortality are treated at the Neonatal Intensive Care Unit.

II. Material And Methods

This retrospective analysis elaborates on neonatal mortality or mortality in live- born neonates in the period 0-28 days after delivery at the UCGO-Skopje, in the period of 7 years (from 2011 to 2017) and its trend, in relation to the total number of births in that period. The data is collected from the Info Centre and the histories of the disease of women that gave birth and the newborns treated at the Department of Neonatal Intensive Care and Therapy at UCGO-Skopje during this period. The neonatal mortality and its trend movement during these 7 years will be processed and in total for the whole period of these 7 years. The number of deceased live- born babies in the neonatal period will be processed and divided into three categories:

1. live- born neonates who died on the first day after delivery – in the first 24 hours
2. live- born neonates who died 2-7 days after delivery
3. live- born neonates who died 8- 28 days after delivery.

Inclusion criteria was: Neonatal death of live- born neonates in the period of 0-28 days after delivery, with birth weight more than 500 gr. and full 22 gestational week on the day of delivery. Live- born neonates, born at UCGO-Skopje, in the period 2011-2017.

Exclusion criteria was: Death of newborns after 28 day of delivery. Live-born neonates, born out of UCGO-Skopje and infanticide.

Results for the neonatal mortality at UCGO-Skopje, during these years will be shown with the percent of neonatal mortality rate- tabelary and the trend of neonatal mortality and its movement, will be shown in graficons.

III. Results

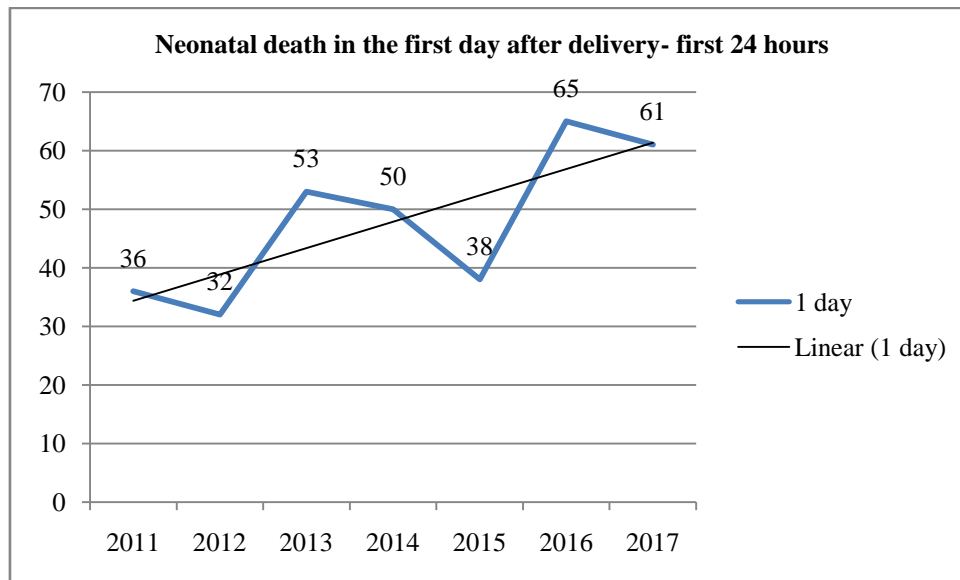
Table 1: During this period of 7 years at UCGO-Skopje, there were 36,733 live- born newborns, out of which 912 newborns died in the neonatal period after delivery, from 0-28 days after delivery. The results show that the number of early neonatal deceased newborns, 0-7 days after birth, is higher and is especially significant in the first 24 hours after delivery. This is understandable since the period of early adaptation of newborns immediately after delivery is riskier in the first week after delivery and especially in the first 24 hours after delivery. The number of late neonatal deaths from 8 until before 28 days after delivery is also high and deviates from the number in the highly developed countries and other middle developed countries, such as Macedonia. The total neonatal mortality of UCGO- Skopje in this 7 year period is 24.82 %, or 24.8 neonatal deaths in the neonatal period after delivery (0-28 days) per thousand live births. The highest neonatal mortality rate of 33.81% was recorded in 2017, while the lowest rate was 17.19 % , recorded in 2015.

Table 1. Neonatal mortality in newborns after delivery divided in tree groups/ UCGO- Skopje/2011-2017

Year	Neonatal mortality in neonatal period from 0-28 day after delivery			Total
	1 day	2-7 day	8-28 day	
2011	36	54	25	115
2012	32	39	38	109
2013	53	41	29	123
2014	50	55	30	135
2015	38	37	22	97
2016	65	78	35	178
2017	61	69	25	155
Total	335	373	204	912

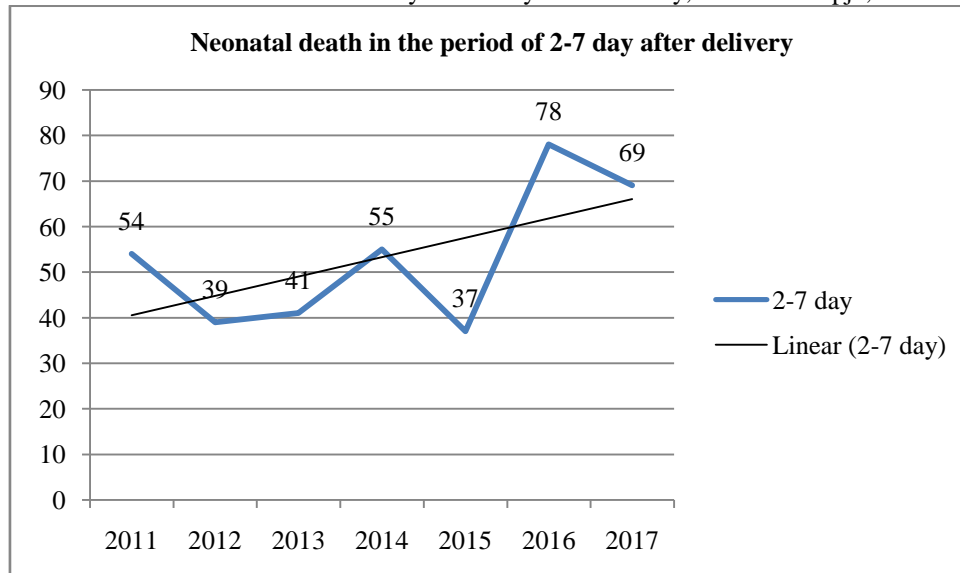
Graficon 1: Neonatal death in the first 24 h. after delivery in this period of seven years (2011-2017) is 335 or 36,37% of all neonatal deaths. The trend of neonatal mortality in the first 24 h. after delivery is high and had tendency of rising.

Grafikon 1. Trend of neotanatal mortality during the first 24 hours in the period from 2011-2017



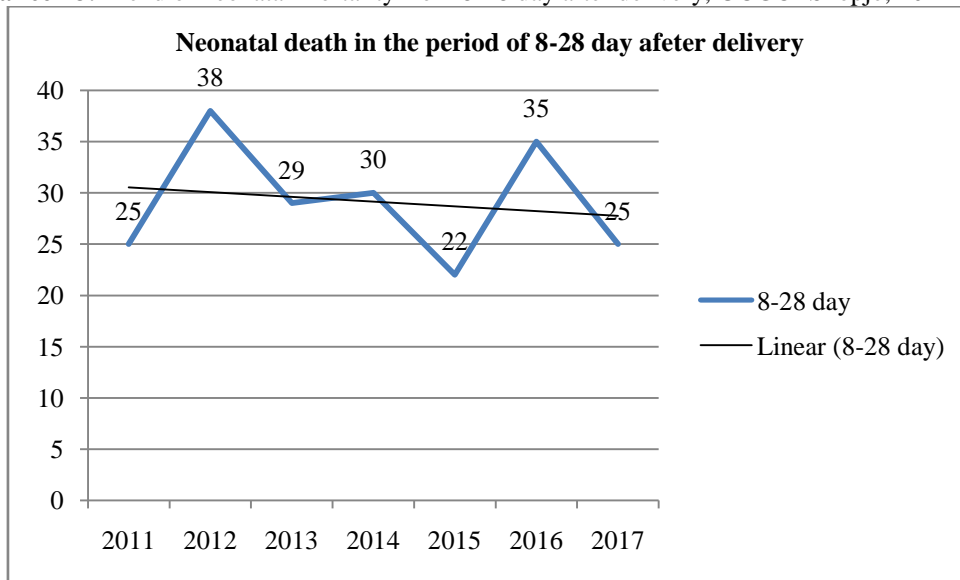
Grafikon 2: Neonatal mortality from 2-7 day after delivery in this period is also high, 373 neonatal deaths or 40,9% of total mortality in this group. The trend of this early neonatal mortality is also with rising trend. Neonatal mortality in early neonatal period (0-7 days), is totally- 708 or 77,6% of all neonatal deaths in this period.

Grafikon 2. Trend of neonatal mortality in 2-7 day after delivery, UCGO- Skopje; 2011- 2017



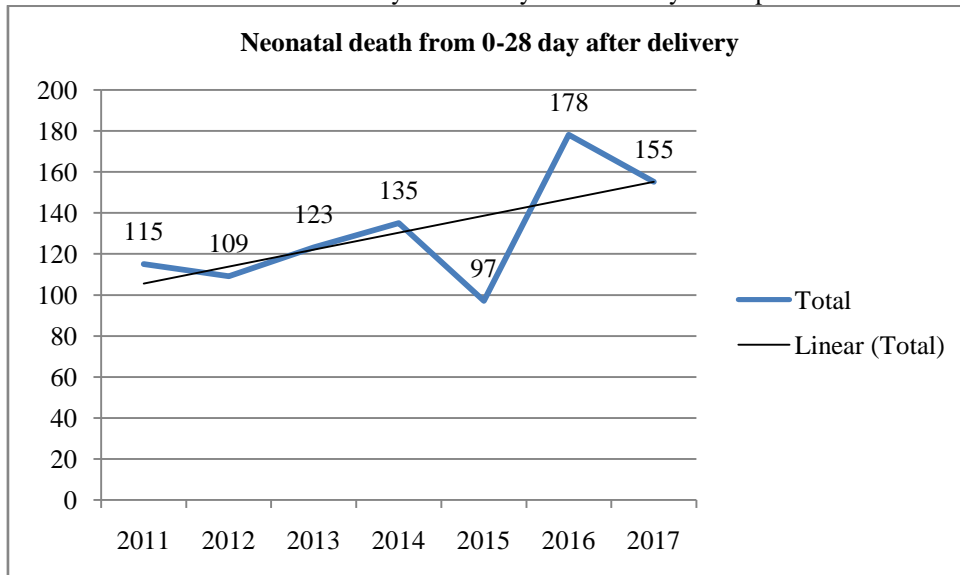
Grafikon 3: In the period of 8-28 day after delivery (late neonatal mortality), mortality of the live- born neonates is 204 or 22,36% from the whole group. Only in this group the trend of neonatal mortality slidely falling down .

Graficon 3. Trend of neonatal mortality from 8-28 day after delivery, UCGO- Skopje; 2011-2017



Graficon 4: The total neonatal mortality (0-28 day) after delivery, in this period of 7 years at UCGO-Skopje is high, higher than in a developed countries and more of the developing countries, with 24,8 ‰, or 24,8 neonatal deaths on 1000 live- born neonates in neonatal period after delivery. The trend of total neonatal mortality (0-28 day) after delivery, in our UCGO-Skopje, also shown tendency of rising, in this seven years period (2011-2017).

Graficon 4. Trend of neonatal mortality in 0-28 day after delivery in the period from 2011-2017



IV. Discussion

Highly developed countries have low neonatal mortality rates. Macedonia falls in the category of the middle-income countries, but according to the number of neonatal mortality it is getting closer to the less developed countries and developing countries. The neonatal mortality rate in Macedonia is quite high, higher than in the countries in our surroundings, the Balkan countries and the mid- developed countries of the world and it was 10.5 ‰ in 2017 year for the whole country. The purpose of this paper is to show the percentage of neonatal mortality among live- born neonates at the UCGO-Skopje from 0-28 days after delivery, and the trends of movement of the mortality in the period 2011-2017. To reduce the rate of neonatal mortality and bring Macedonia closer to the countries with a low neonatal mortality rate, it is necessary to improve the care of pregnant women, increase the quality of antenatal care, improve living conditions and standard of living, efficient and adequate care for newborns- in perinatal centers for the care of newborns and health education and

education of the population. It is therefore desirable to identify some predictors and conditions that are important and may affect the neonatal mortality rate and its reduction, such as: maternal causes (morbidities and comorbidities during pregnancy), newborn causes (prematurity, discovering fetal abnormalities, infections, etc.), socioeconomic reasons (employment, education, socioeconomic status, marital status) and reproductive (IVF, multiple pregnancy, quality antenatal protection). All these causes, together or separately, raise the rate of neonatal mortality.

V. Conclusion

Highly developed countries have a low neonatal mortality rate. All of this is in correlation with the invested funds and health system's condition and effective programs for protection of mothers and children, developed antenatal care system and professional and technological staffing and efficient management of the perinatal centers. Macedonia need to implement all this facts, for lower neonatal mortality in the future.

References

- [1]. World Health Organization . WHO Libr.; 2006. Neonatal and perinatal mortality: country, regional and global estimates.
- [2]. UNICEF, WHO, The World Bank, UN; New York, USA: 2014. Levels and trends in child mortality. Report.
- [3]. Lawn JE, Cousens S, Zupan J, Lancet Neonatal Survival Steering T. 4 million neonatal deaths: when? Where? Why? Lancet. 2005 Mar 5;365(9462):891-900.
- [4]. The World Health Report (2005) Make Every Mother and Child Count. World Health Organization, Geneva.
- [5]. GBD 2013 Mortality and Causes of Death Collaborators Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2015;385(9963):117–171. [PubMed]
- [6]. UNICEF, WHO, The World Bank and UN: Levels and trends in child mortality Report 2017.
- [7]. Neonatal mortality rate by countries,2018-knoema.com
- [8]. WHO| Neonatal mortality: trends 1990-2010
- [9]. Hibstu, D.T., Ayele, T.A. and Mengesha, Z.B. (2014) Determinants of Neonatal Mortality in Ethiopia: A Case Control Study, 2013. Open Access Library Journal, 1: e880.
- [10]. Oestergaard MZ, Inoue M, Yoshida S, Mahanani WR, Gore FM, Cousens S, et al. Neonatal mortality levels for 193 countries in 2009 with trends since 1990: a systematic analysis of progress, projections, and priorities. PLoS medicine. 2011 Aug;8(8):e1001080.
- [11]. World Health Organization. Care of the preterm and/or low-birth-weight newborn [Internet]. 2013 [cited 2013 March 7]. Available from: http://www.who.int/maternal_child_adolescent/topics/newborn/care_of_preterm/en/
- [12]. Starčević M. Novorođenački rizici kasne nedonošćadi. Gynaecol Perinatol. 2011;20(2):91–4.
- [13]. Filipovic-Grgic B, Rodin U, Runtic B. i sur. Smrtnost novorođencadi do otpusta iz bolnice u Republici Hrvatskoj u 2015 godini. Gynaecol Perinatol 2016;25(Suppl.2):S26-S36.

Gabriela Bushinoska Ivanova, et. al. "Neonatal Mortality Trend at the University Clinic of Gynecology and Obstetrics- SKOPJE in the period of 2011-2017." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(5), 2020, pp. 55-59.