



Mortality Rate in the Neonatal Intensive Care Unit at IBN SINA Teaching Hospital Sirte-Libya

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ABSTRACT

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Studying the mortality rate of newborns in the neonatal intensive care unit (NICU) is of paramount importance as it provides valuable insights into the effectiveness of medical interventions, clinical practices, and healthcare strategies aimed at reducing infant mortality. By analyzing the mortality data, healthcare professionals can identify areas for improvement, implement evidence-based practices, and develop targeted interventions to enhance the quality of care and ultimately save more infant lives, throughout one. Total number of newborns in hospital 4,369 number of death 44. The data focused on death certificates of neonates

1.0 Introduction

According to the United Nations Development Goals reports, about 130 million newborns are born annually in the world, of whom one million die annually during the first month. Two-thirds of them or about 600,000 die during the first week of life, and specifically about 200,000 die in the first twenty-four hours of life. Therefore, it was the goals of the United Nations development plan, are to reduce the mortality rate by 2015, especially in countries that suffer from a high rate of neonatal mortality[1] The neonatal mortality rate indicates the death of infants, whether in the delivery room and weighing more than 500 grams, or before they are discharged from the hospital, and admitted to the (NICU) during the first month of life.[2] Neonatal mortality rate is the number of resident newborns in a specified geographic area (country, state, county, etc.) dying at less than 28 days of age divided by the number of resident live births for the same geographic area (for a specified time period, usually a calendar year) and multiplied by 1,000.[3] One of the common terrible tragedies for the individuals, families and communities is a neonatal death in which involved, 2.4 million babies die in the first month of their lives. They also represent a significant loss in global welfare.[4] In 2019, 2,160,000 neonatal deaths occurred in low-income and lower-middle-income countries alone. This translates to a welfare loss

equivalent to \$36 billion and 0.5 % of the Gross Domestic Product (GDPs) for neonatal deaths, the total loss was therefore 5.5 % of (GDP) in low-income and lower-middle-income countries.[5] Additionally, examining mortality rates in neonatal care is crucial not only for individual hospitals but also for public health officials and policymakers. This information is essential for developing strategies and initiatives to decrease infant mortality on a larger scale. By using this data, stakeholders can effectively allocate resources and implement public health interventions to address the root causes of neonatal mortality. Ultimately, studying mortality rates in neonatal care is essential for improving clinical practices, advancing medical research, and informing public health policies to ensure the well-being of newborns in neonatal intensive care units. Furthermore, the study of mortality rates in neonatal care plays a critical role in advancing medical research and the development of evidence-based practices. By understanding the factors contributing to neonatal mortality, healthcare professionals can conduct targeted research to identify innovative interventions and treatment approaches. This can ultimately lead to a reduction in mortality rates and an improvement in the overall quality of neonatal care [6]

Aim of study

To identify number of death. In addition, variable causes of neonatal mortality among newborn babies through 2023 year, in NICU at Ibn Sina Teaching Hospital.

2.0 Subject and Method

The Neonatal Intensive Care Unit (NICU) at Ibn Sina Teaching Hospital plays a critical role in providing intensive medical care for newborns who require specialized attention due to prematurity, low birth weight, or critical illness. The NICU is equipped with advanced medical technology and a team of skilled healthcare professionals dedicated to addressing the unique medical needs of newborns. This unit is essential for improving the survival and long-term health outcomes of at-risk infants. Which divided into three levels of neonatal care, according to the recommendation of American Academy of Pediatrics (AAP). By total capacity 20 incubators, the data collected from files of registration and death certificates in the statistical department, the duration of this study from 1 January 2023 to 31 Dec 2023

2.1 Inclusion criteria: All neonates born in Ibn Sina Teaching hospital and need admission to NICU either by normal or cesarean section regardless the cause and duration of admission

2.2 Exclusion criteria: those less than 24 gestational weeks, intrauterine fetal death, and babies delivered outside the hospital and transfer to pediatric department.

2.3 Principled Considerations: Scientific committee and medical services office responsible for issuing written approval, and confidentiality of data guaranteed.

2.4 Statistical methods: the data of presented study analyzed by the application of the statistical package social science software version 17 (SPSS). Data collected, analyzed, and expressed as frequency distributions and then computed in percentages in tables and figures.

3.0 Results

Throughout the study period from 1st January to 31 Dec 2023 the total birth in obstetrics and gynecology department in In Sina Teaching hospital was 4369, from those 2692 (62%) born by Normal vaginal delivery and 1677 (38%) produced by caesarian section as show in table (1) and figure (1)

Table 1 Total birth in obstetrics and gynecology department in In Sina Teaching hospital

Numbers	%	
Total birth	4369	
Normal Vaginal Delivery (NVD)	2692	62%
Caesarian Section (CS)	1677	38%

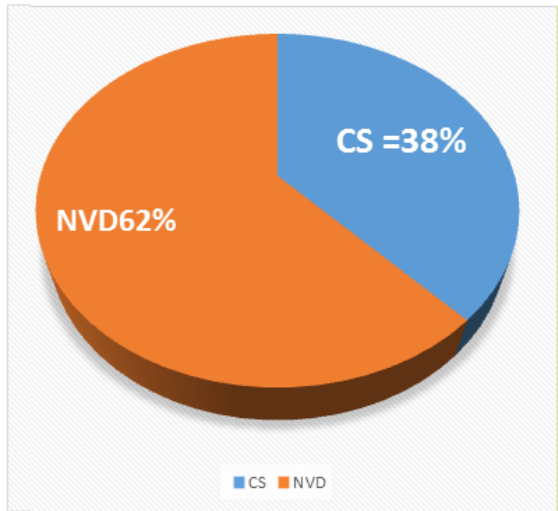


Figure 1 Total birth in obstetrics and gynecology department in In Sina Teaching hospital

The total admission to the (NICU) was 372 cases (8.5%) as show in Table (2)

Table 2: The total admission to the (NICU)

Total birth	4369	100%
Number of admission	372	8.5%

Neonatal mortality rate through 2023 was 44 babies (10/1000). As show in table (3).

Table 3: Neonatal mortality rate

Numbers		
Total birth	4369	
Total death	44	10/1000

more than one third of neonatal mortality in presented study due to multiple congenital anomalies (16) (36.6%), thirteen babies died due to complication of low birth weight (29.55%), nine cases due to sepsis (20.45%) and six of them due to birth asphyxia(13.63%) as show in table (4) and figure(2).

Table 4: The Percentage of neonatal mortality in the presented study

Cause of death	Numbers	%
Multiple congenital anomalies	16	36.6%
Low birth weight	13	29.55%
Infection	6	20.45%
Birth asphyxia	9	13.63%

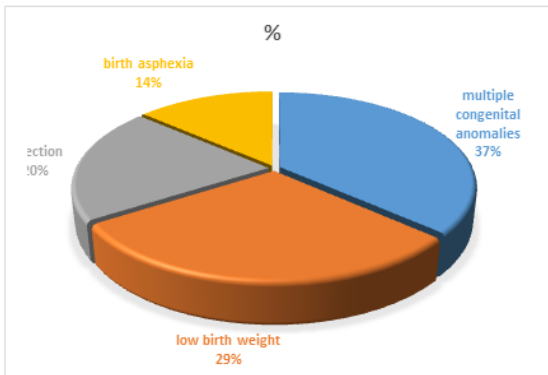


Figure 2: The Percentage of neonatal mortality in the presented study

4. Discussion

The outmost hazard of childhood death occurs during the neonatal period, which extends from birth through the first month of life. Nearly 60 percent of all deaths to children under age 5 and virtually two-thirds of infant deaths (birth to 12 months) occur during the neonatal period. About two-thirds of all neonatal deaths occur during the first week of life. Current estimates place the annual neonatal death toll at 4 million. Approximately 98 percent of neonatal deaths occur in the developing world the highest annual neonatal rates are in South Asia, where an estimated 51 deaths occur for every 1,000 live births. Each year in South Asia alone, 2 million children die within a month of their birth. By comparison, the rates per 1,000 live births are 42 in Africa, 25 in Latin America, and fewer than 10 in Europe and North America. [7] Several studies has been conducted and are still being published continuously regarding neonatal mortality, as it is considered a global burden. For the fetus, the effects of labor on the baby are not clear. Ongoing pregnancies may result in stillbirth or the need for NICU. Some studies indicate that patients who delivered vaginally need NICU at a higher rate than pregnant women who

gave birth by cesarean section. In a study comparing cesarean and vaginal deliveries. In our study, the four thousand three hundred and sixty nine pregnant woman admitted to obstetrics and gynecology department, sixty-two percentage of them produced by normal vaginal delivery, and thirty eight-percentage by cesarean section. Comparing to the study conducted at University of Health Sciences, Ankara City Hospital, which revealed nearly similar percentage, from 300 pregnant women, one hundred eighty two (60.3%) was produced by normal vaginal delivery and 118(39.3%) had cesarean deliveries.[8]. In the present study, the prevalence of admission, to NICU throughout 2023 was 372 (8.5%) babies out of 4369 from total birth including both normal delivery and cesarean section. We had high rate of admission comparing to study performed in Department of Pediatrics, King Abdul-Aziz University Faculty of Medicine, and Jeddah, Saudi Arabia 2017 where they found 142 admitted to the NICU, for a cumulative incidence of 4.1% (142/3314). [9]. In present study, the neonatal mortality 44/1000, (10%), sixteen of them (36.6%), due to multiple congenital anomalies. Whereas 13(26.6%) low birth weight and complication of prematurity, and 9(20.45%) due to sepsis. Comparing the study performed in NICU at Benghazi Pediatric Hospital– Libya were they found Out of 1610 neonatal admissions reviewed, the total number of deaths was 122 (7.5%) of total neonatal admissions to the hospital during the year 2015.

5. Conclusion

Based on the present study’s results, the neonatal mortality rate still slightly high in our hospital compared to similar studies, although the vast majority of them due to multiple congenital anomalies. Most newborns had a normal delivery (62%). The others born by caesarean section (38%). There were 44 neonatal deaths, where nearly half of them died due multiple congenital anomalies, which is a warning sign for health services. Most newborn stay in hospital from one to 30 days.

Recommendation

1. We have to improve antenatal care level to decrease the gestational problem including gestational hypertension diabetic and premature labor
2. More information regarding the congenital anomalies including full maternal history, consanguinity and detail neonatal data.

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