

Review of Perinatal Deaths in a Tertiary Care Hospital of Nepal

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ABSTRACT

Aims: Perinatal mortality is a public health problem especially in developing countries like Nepal. This study is an attempt to assert the perinatal mortality status for the year 2016/2017 A.D. of Shree Birendra Hospital, a tertiary hospital. This study becomes imperative to comprehend the various shortcomings in the maternal and child health care, so as to remedy them effectively.

Methods: This is a hospital record-based study conducted at Shree Birendra Hospital, Kathmandu, a tertiary care facility of the Nepal Army. The record of all perinatal death from 13th April 2016 to 12th April 2017 was reviewed.

Results: Out of 1051 total births, there were 12 perinatal deaths with perinatal mortality rate of 11.42 per thousand births. Perinatal death was more prevalent in the age group 20-25 (58.33%), multiparous female (60%), period of gestation between 35-40 weeks (58.34%), male gender of baby (66.67%) but equal number of deaths was seen in both vaginal delivery and emergency LSCS. According to the Wigglesworth pathophysiological classification to classify perinatal deaths, conditions specific to neonate (33.3%) constituted as a significant cause perinatal death followed by stillbirths or neonatal deaths with congenital anomalies (25%) and conditions associated with prematurity (25%).

Conclusions: Neonatal sepsis contributed to the major burden of perinatal mortality. Keeping detailed medical records, screening for Group B streptococcus in the third trimester, and using clinical autopsy can further strengthen obstetric and neonatal care.

Keywords: early neonatal mortality rate, perinatal mortality, stillbirth

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INTRODUCTION

Worldwide, there are over 6.3 million perinatal deaths a year, almost all of which occur in developing countries - 27% of them in the least developed ones.¹ Stillbirths account for over half of all perinatal deaths, of which one-third of stillbirths occur during delivery, and are largely avoidable. Intrapartum deaths are closely linked to the quality and location of delivery. Nepal has the 5th highest perinatal mortality rate (PMR) among SAARC nations. Although, the PMR has been declining since 2006 to 2016, stillbirth rates have increased slightly.² The PMR in Nepal in 2016 is 31 per 1000 pregnancies.³ The result from this study may provide baseline data on perinatal death.

METHODS

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This is a hospital record based retrospective study conducted at 620 bedded Shree Birendra hospital to explore the perinatal mortality status. Data were collected over a period of 12 month from 13th April, 2016 to 12th April, 2017 from maternity unit and post-natal ward of the Gynecology and Obstetrics Department and Neonatal Intensive Care Unit of the Pediatrics Department using a structured format. Approval was obtained from Institutional review board (IRB), Nepalese army institute of health science (NAIHS). Pregnancy outcome beyond 28 weeks of gestation, intrapartum fetal death and outcome of neonates till 7 days of life, which were either admitted within the Neonatal ICU or referred from other centers were included in the study. Age, parity, gestational age, number of antenatal visits, mode of delivery, birth weight, neonatal admission, neonatal morbidity and perinatal deaths were the

study variables.

Data were entered in MS-Excel to generate tables and figures for further analysis. Missing data from the record was obtained by phone interviews with concerning patients and their members. Modified Wigglesworth classification was used to ascertain single death and group them in 5 categories for analysis.

RESULTS

Out of 1051 total births in the hospital, there were 12 perinatal deaths with the rate of 11.42 per thousand births [Table-1].

Table-1: Distribution of perinatal death (N=12)

Perinatal death	Number	Rate per 1000
Stillbirth	6	5.71
IUFD	3	

Table-2: Perinatal characteristics

Variables	Group	%	Variables	Group	%
Age in year	20-25	58.33	Gestation weeks	<34	8.33
	30-35	16.67		35-40	58.34
	Undocumented	25		>40	33.33
ANC visits	4+	50	Birth weight	<2.5 kg	33.33
	1-3	33.33		≥2.5 kg	50
	Undocumented	16.67		Undocumented	16.67
Gravidity	Multigravida	60	Mode of delivery	Vaginal	50
	Primigravida	41.67		LSCS	50
	Undocumented	8.33		Undocumented	-

The highest number of perinatal deaths from January to February was 3 [Figure-1].

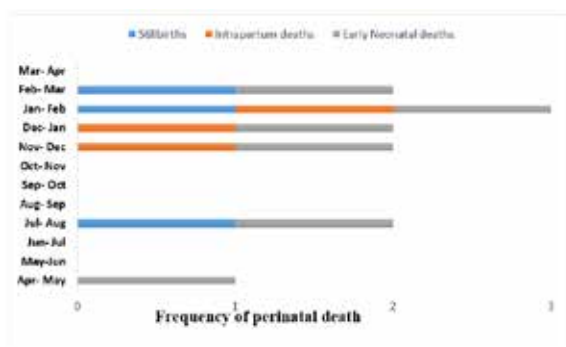


Figure-1: Number of perinatal deaths starting from April 13th, 2016 to April 12th, 2017

Perinatal death	Number	Rate per 1000
Fresh	3	
Early NND	6	5.71

Perinatal death was more (58.33%) in the age group 20-25. More deaths have been recorded in patients who have more than 4 antenatal visit (50%) as compared to less visits to hospital. Similarly, more death is seen in multiparous female (60%). Higher frequency of death is seen in period of gestation between 35-40 weeks (58.34%), compared to period of gestation less than 34 week (8.33%) and greater than 40 weeks (33.33%). Equal number of deaths (50%) was seen in both vaginal delivery and emergency LSCS. Babies born with birth weight greater than or equal to 2.5kg had adverse outcome (50%) compared to birth weight of less than 2.5 kg (33.3%). Higher perinatal death was seen in male gender (66.67%) compared to female (25%) [Table-2].

There were a total of 6 stillbirth - out of which 4 cases had overt maternal diabetes with Turner's syndrome, congenital heart disease, obstructed labor, meconium aspiration as the cause - whereas 2 of them were idiopathic. 2 of them were fresh stillbirth, 1 was macerated, and 3 were undocumented. Of the 6 cases of early neonatal deaths: neonatal sepsis, neonatal sepsis with disseminated intravascular coagulopathy (DIC), necrotizing enterocolitis with late-onset neonatal sepsis, perinatal asphyxia, syndromic baby with intrauterine growth restriction with neonatal sepsis were the causes respectively in 5 and undetermined in 1. 3 of them were admitted for grunting, rest were admitted for poor feeding, poor respiratory effort, and intrauterine growth restriction (IUGR). 4 of them had good, and 2 had poor APGAR

scores. 2 of them cried immediately after birth, and 4 did not. 4 of them had a negative C-reactive protein (CRP) value and 1 had a positive one. 4 of these babies died within 72-96 hours of life, 1 within 12 to 24 hours of life, and 1 within 6 days of life [Figure-2].

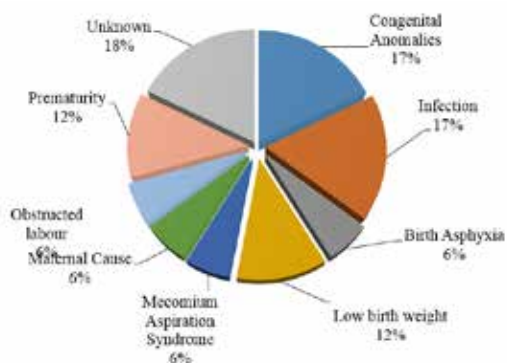


Figure-2: Causes of Perinatal Mortality

We used the Wigglesworth pathophysiological classification to classify perinatal deaths because of its simplicity, reproducibility, and lack of necropsy requirement.⁴ We also used this classification to assess our data to compare performance over time and between centers, and to ensure reproducibility [Table-3].

Table-3: Perinatal Mortality According to Wigglesworth Classification

Class	Definition	Percentage of PMR
I	Normally formed macerated stillbirths	8.33%
II	Stillbirths or neonatal deaths with Congenital anomalies	25%
III	Conditions associated with prematurity	25%
IV	Asphyxial conditions developing in labor	8.33%
V	Conditions specific to Neonate	33.33%

DISCUSSION

In a demographic and health survey of Nepal from 2001-2016, the PMR was 42 per 1000 births [95% Confidence Interval (CI): 39, 44] for the five-year before each survey.²The PMR of Tribhuvan University Teaching Hospital in 2012 was 18 per thousand.⁵ The PMR of Patan Hospital in 2016/17 was 12.36 per thousand births.⁶ The PMR of Manipal

Teaching Hospital, Pokhara in 2015 was 37.6 per 1000 births.⁷ The PMR of Shree Birendra Hospital is currently 11.42 per thousand births. Hussain et al used a Wigglesworth Classification in a tertiary center in Pakistan to show that Prematurity, low birth weight, asphyxia and neonatal sepsis are the main causes of mortality⁸ and Shrestha et al used the same to show normally formed macerated stillbirths (49 %) in Teaching hospital, Nepal.⁵ Perinatal asphyxia caused for 13.6% of deaths, lethal congenital malformation 11.2%, and immaturity. The PMR of the past decade of various Kathmandu based hospitals has improved as shown by better results. Tertiary care hospitals in the capital have lower PMR compared to the national average including district hospitals in the southern Terai and hilly regions of Nepal.

Although there was an equal prevalence of stillbirths and early neonatal deaths, Nepal has more early neonatal deaths than stillbirth.⁹ We noticed peak perinatal deaths from November to February, which correlates with a high number of deliveries during this period. Statistically the majority of perinatal deaths were seen in cases who received previous ANC care in the hospital but proportionately perinatal deaths were more prevalent in mothers who received none or few ANC visits in the hospital where they had their delivery. Stillbirths were mostly idiopathic, but to a lesser extent due to congenital anomalies, chronic maternal illnesses, obstructed labor, and meconium aspiration. Most stillbirths were intrapartum deaths (fresh stillbirth) but due to improper documentation of the clinical examination of the babies, this could not be ascertained.

The most common cause of death in early neonates was neonatal sepsis followed by necrotizing enterocolitis, perinatal asphyxia, and finally, genetic syndrome with intrauterine growth restriction. A review of other multi-center studies in Nepal also has shown perinatal asphyxia, low birth weight, and infection as the most common causes, but many of the perinatal deaths were unexplained.² Most cases of early neonate with perinatal deaths complained of grunting followed by poor feeding, poor respiratory effort, and low birth weight during admission.

Better assessment of cases can be aided by detailed intrapartum monitoring, recording of events, and separate elaborative documentation of perinatal

deaths. A postmortem examination can potentially reveal the cause and time of death, inform relevant discussions about the risk of recurrence and provide information for medico-legal proceedings.¹⁰ Population-based verbal autopsy (VA) tools are standardized yet convenient methods to assess perinatal deaths in low to middle income countries.¹¹ Religio-cultural factors discouraging young mother to come for antenatal visit or delivery at health care facility and attitude towards perinatal deaths should also be addressed.¹² The trainings and simulation practice healthcare providers at Maternity department and NICU to perform neonatal resuscitation as birth asphyxia was third contributing cause of perinatal deaths in our institution.^{13,14}

Group B streptococcus (GBS) infection is the leading cause of newborn infection with approximately 50% of women who are colonized transmit the infection to their neonate and the American College of Obstetricians and Gynecologists now recommends performing universal GBS screening between 36 0/7 and 37 6/7 weeks of gestation.¹⁵ Swab the vaginal introitus, followed by the rectum through the anal sphincter using the same or two different swabs and all women whose vaginal-rectal cultures are positive for GBS should receive appropriate intrapartum antibiotics prophylaxis unless a pre-labor cesarean

birth is performed in the setting of intact membranes.¹⁶

Limitation of study

This study is limited by the facts that manual medical record-keeping system did not separately document perinatal deaths. The data is secondary, so the recovery of discharged files and missed records of neonatal deaths outside the study hospital were inconsistent. Tracing the causes of perinatal deaths and lack of autopsy was an obstacle to reach an accurate diagnosis and cause of death. It should also be considered that this is a urban tertiary case bases hospital data which cannot be generalized to reflect upon and compare with regional or nation's wide data.

CONCLUSIONS

Neonatal sepsis constituted the major burden of perinatal mortality. Detailed and organized medical record keeping is lacking.

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