

Perinatal mortality audit

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ABSTRACT

Perinatal mortality rate is a sensitive indicator of quality of care provided to women in pregnancy, at and after child birth and to the newborns in the first week of life. Regular perinatal audit would help in identifying all the factors that play a role in causing perinatal deaths and thus help in appropriate interventions to reduce avoidable perinatal deaths. A retrospective study of perinatal indices was conducted among 816 births delivered during the period of 1 year from April 2007 to March 2008 in Nepal Medical College. There were 11 still births and 11 early neonatal deaths. Breech presentation with stucked head and respiratory distress syndrome in preterm babies are the common causes for perinatal mortality. Within the Wigglesworth's classification; group 1, 3 and 4 are the common groups of perinatal death. The 76.5% of perinatal deaths and 100% of early neonatal deaths were low birth weight babies. Similarly 72.5% of perinatal death and 82% of early neonatal death were preterm babies. The perinatal mortality was 26.9/1000 births, comparable to other studies, but still emphasis should be given to upgrade the neonatal care. The efforts should be made for regular antenatal checkups and improvement of neonatal care.

Keywords: Perinatal mortality, Nepal Medical College and Teaching Hospital.

INTRODUCTION

The perinatal mortality rate (PMR) is used as an indicator of the quality of antenatal and perinatal care provided to pregnant women and newborns.¹ The neonatal mortality rate (NMR) and rate of stillbirth in Asia consists of 40/1000 live births and 28/1000 births respectively.² A multicenter study of perinatal mortality in Nepal, conducted in two urban hospitals were 23.7 and 48.0 per 1000 total births respectively, while this in rural setting were 42.5 and 56.2 per 1000 births.³ Thus it is still a major health problem in Nepal. Nepal Medical College is providing health facilities to population of different socio-economic status and various ethnic groups. The previous study on perinatal mortality in this institute in the year 2001 showed the PMR of 35.2/1000 births.⁴ The objective of this study is to find out the perinatal mortality in this institute at present and detect the further possible measures to reduce the mortality.

MATERIALS AND METHODS

This is a retrospective study which included all the deliveries conducted at Nepal Medical College and Teaching Hospital from April 2007 to March 2008. The deliveries before 28th weeks of gestation and babies with birth weight below 1000 grams were excluded. Late fetal deaths (LFD) and early neonatal deaths (ENND) were analyzed with respect to various risk factors. Analysis of data was done manually. The perinatal deaths were classified according to Wigglesworth's classification.⁵

RESULTS

Out of 816 total births, 805 (98.7%) were live births and 11 (1.3%) were still births. All 11 neonatal deaths were within 7 days of birth. The total number of perinatal death was 22 with PMR of 26.9/1000 births (Table-1). Breech presentation with stucked head was the most important cause of still birth (Table-2). Respiratory distress syndrome in premature babies was the most common cause of early neonatal death (Table-3). According to Wigglesworth's classification the perinatal deaths were classified into different groups (Table-4). Out of 22 total perinatal deaths, 77.2% were low birth weight babies (Fig. 1) and 72.5% were preterm babies (Fig. 2). Similarly, out of total 11 early neonatal deaths, 100.0% were the babies of low birth weight (Table-5) and 82.0% were preterm babies (Table-6). In the study 36.0% of the mothers did not have antenatal checkup during pregnancy (Fig. 3).

DISCUSSION

The global estimation of PMR is 10 per 1000 births in developed countries, 50 per 1000 births in developing countries and 60 per 1000 births in least developed countries.⁶ The perinatal death audit done in Kathmandu Medical College Teaching Hospital from September 2002 to August 2003 showed PMR 30.7 and extended perinatal mortality rate 47.9 per 1000 births.⁷ Published results in different centers across the Nepal showed the wide variations in perinatal mortality rate. The results

Table-1: Perinatal index

	n	%
Total No of births	816	100.0
Total No of live births	805	98.0
Total No of still births	11	1.3
Early neonatal deaths	11	1.3
Late neonatal deaths	0	0
Perinatal deaths	22	2.6
Still birth rate (SBR)	13.5/1000 births	
Early neonatal mortality rate (ENMR)	13.5/1000 live births	
Perinatal mortality rate (PMR)	26.9/1000 births	

Table-2: Causes of still births (n=11)

Still births	n	%
Breech with stucked head	3	27.2
Cord prolapse	1	9.1
Prolonged labour	1	9.1
Antepartum hemorrhage	1	9.1
Congenital anomaly (hydrocephalus)	1	9.1
Non-immune hydrops with imperforate anus	1	9.1
Pregnancy with syphilis	1	9.1
Unknown infection	2	18.2
Total	11	100

in hospitals within valley ranges from 19/1000 to 48/1000 births, while that in rural areas ranges from 42/1000 to 96/1000 births respectively.³⁻⁸ The another study done in Kathmandu Medical College Teaching Hospital during November 2003 to October 2005 showed PMR 19.1 per 1000 births and Early neonatal death rate 6.7 per 1000 live births.⁹ In a similar study done in Patan Hospital during the year 2002-2003, PMR was 22.4 per 1000 births and early neonatal mortality rate was 8.8 per 1000 live births.¹⁰ In the year 2007-2008 the neonatal

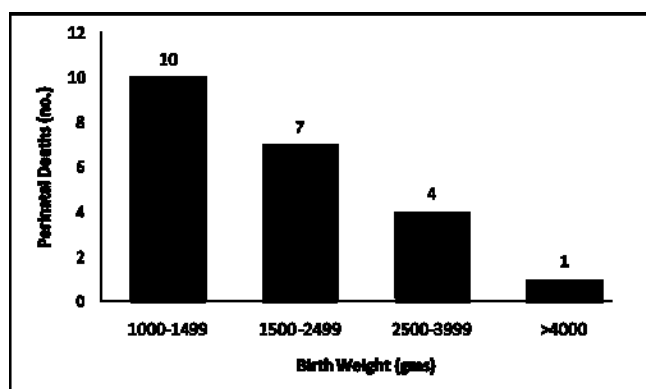


Fig. 1. Perinatal deaths in relation to birth weight

Table-3: Causes of early neonatal deaths (n=11)

Early neonatal deaths	n	%
Preterm: (Respiratory distress syndrome)	5	45.4
(Neonatal sepsis)	2	18.2
(Birth asphyxia)	2	18.2
Term: (Neonatal sepsis)	2	18.2
Total	11	100

mortality rate of TUTH was 6.3 per 1000 live births.¹¹ The PMR in this study was 26.9/1000 births. This result shows significant reduction in PMR in compare to the year 2001. Though PMR has decreased, main cause of decrease in PMR was due to decrease in still birth from 28.3/1000 birth to 13.5/1000 birth, whereas NMR has increased from 6.9 to 13.5/1000 birth.⁴

In our study the incidence of low birth weight was 10.6% and preterm deliveries was 10.4%. In a similar study done in this Medical College in the year 2005 -2006, the incidence of low birth weight was 11.9% and preterm deliveries was 31.4%.¹² In this study 76.5% of perinatal death and 100% Of early neonatal death were among low birth weight babies. The perinatal death in relation to gestational age showed 72.5% perinatal death and 82% early neonatal death were in preterm babies. 45.0% of ENND is due to respiratory distress syndrome in premature babies, 36.0% due to neonatal sepsis and 19.0% due to birth asphyxia. Our finding is similar to a study done in Patan Hospital where 30.0% on NND was due to respiratory distress syndrome, 25.0% due to neonatal sepsis, 16.0% due to congenital anomalies and 13.0% due to birth asphyxia.¹³ A population based cohort study done in Southern Nepal showed 30.0% of NND is due to birth asphyxia.¹⁴ Similar study in College Of Medical Science showed 48.0% of NND is due to birth asphyxia, 29.0% due to neonatal sepsis and 22.0% due to prematurity.¹⁵

In our study, the most important cause of neonatal death is respiratory distress syndrome due to prematurity. When premature delivery is expected, mother should be given steroid during antenatal period to decrease respiratory distress syndrome in the newborn. The care

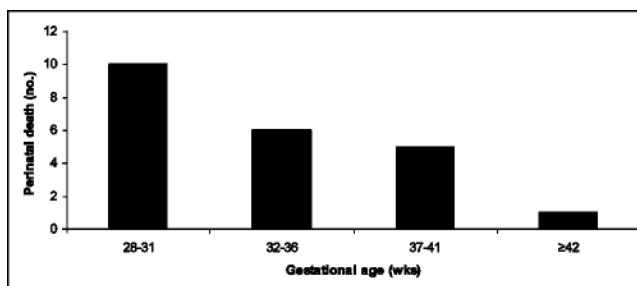


Fig. 2. Perinatal deaths in relation to gestational age

Table-4: Wigglesworth's classification

Groups	n	%
Group - 1	5	22.7
Group - 2	2	9.1
Group - 3	5	22.7
Group - 4	6	27.3
Group - 5	4	18.2

given to the babies born prematurely should be upgraded to the tertiary care level in the neonatal unit. Ventilatory support should be available for the newborns. The surfactant therapy should be

introduced. Early detection and prompt referral of the sick newborn requiring ventilatory support to the higher centre decreases the mortality. Nasal continuous positive airway pressure (CPAP) in newborn babies with respiratory distress reduces requirement of mechanical ventilation there by decreases referral to higher centre.¹¹ Neonatal sepsis is the second important cause of neonatal death. To decrease sepsis proper hand washing by all the staffs and the visitors should be strictly followed. Hand should be washed before and after examining each baby. Apart from the parents other visitors should not be allowed in the neonatal care unit. Birth asphyxia is another important cause of neonatal death. Proper use of partogram and timely intervention by gynecologist during delivery when there is prolong labour and fetal distress will decrease the incidence of birth asphyxia. Significant percentage of patient did not have antenatal checkup in the study. Patients should be made aware about the importance of antenatal checkup. Regular antenatal checkup will help to decrease still birth which in turn will decrease PMR.

Table-5: Perinatal deaths in relation to birth weight

Birth weight (grams)	LFD		END		Total	
	n	%	n	%	n	%
1000-1499	5	45.5	5	45.5	10	45.5
1500-2499	1	9.0	6	54.5	7	31.8
2500-3999	4	36.5	-	-	4	18.2
≥4000	1	9.0	-	-	1	4.5
Total	11	100	11	100	22	100

Table-6: Perinatal deaths in relation to gestational age.

Gestational age (wks)	LFD		END		Total	
	n	%	n	%	n	%
28-31	3	27.5	7	64	10	45.5
32-36	4	36.0	2	18	6	27.0
37-41	3	27.5	2	18	5	23.0
≥42	1	9.0	-	-	1	4.5
Total	11	100	11	100	22	100

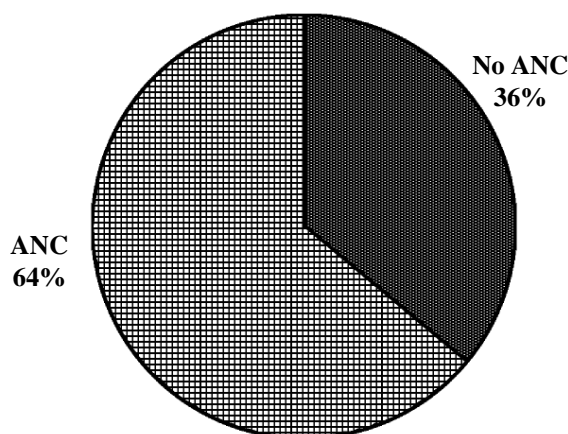


Fig. 3. Perinatal deaths in relation to ANC

REFERENCES

1. Richardus JH, Graafmans WC, Verloove-Vanhorick SP, Mackenbach JP. The perinatal mortality rate as an indicator of quality of care in international comparisons. *Med Care* 1998; 36: 54-6.
2. Zupan J. Perinatal mortality in developing countries. *New Eng J Med* 2001; 352: 2047-8.
3. Geetha T, Chenoy R, Stevens D, Johanson RB. A multicentre study of perinatal mortality in Nepal. *Paediatric Perinat Epidemiol* 1995; 9: 74-89.
4. Vaidhya K, Banskota HK. Perinatal Mortality at NMCTH. *Nepal Med Coll J* 2001; 3: 98-100.
5. Wigglesworth JS. Monitoring Perinatal Mortality – A pathophysiological approach. *Lancet* 1980; 2: 684-6.
6. Neonatal and Perinatal Mortality. Country, Regional and Global estimate. *WHO* 2006.
7. Manandhar DS. Perinatal death audit. *Kathmandu Univ Med J* 2004; 2: 375-83.
8. Shrestha M, Manandhar DS, Dahal S, Nepal N. Two year audit of perinatal mortality at Kathmandu Medical College Teaching Hospital. *Kathmandu Univ Med J* 2006; 4: 176-81.
9. Shrestha M, Bjracharya BL, Manandhar DS. A study of early neonatal deaths at Kathmandu Medical College Teaching Hospital. *Nepal Paediatr Soc J* 2007; 27: 79-82.
10. Ansari I, Adhikari N. Perinatal mortality in Patan Hospital. *Save the children. New Born Health* 2002: 42-5.
11. Shrestha M, Basnet S, Shrestha PS. Bubble-CPAP in neonatal unit of TUTH. *Nepal Paediatr Soc J* 2010; 30: 64-8.
12. Kayastha S, Tuladhar H. Study of low birth weight babies in Nepal Medical College. *Nepal Med Coll J* 2007; 9: 266-9.
13. Shrestha S, Adhikari N. Causes of neonatal deaths at Patan Hospital. *J Nepal Health Research Council* 2002: 27-31.
14. LeClerq SC, Adhikari RK, Shrestha SR, Darmstadt GL. Risk factors for neonatal mortality due to birth asphyxia in Southern Nepal. *Pediatr J* 2008; 121: 1381-90.
15. Gurubacharya SM, Gurubacharya RL. An overview of neonatal admission at College of Medical Sciences. *Nepal Paediatr Soc J* 2007; 27: 73-4.