Original Article

An overview of perinatal mortality in tertiary care centre Gauhati Medical College and Hospital, Guwahati, Assam, India – A 7 years review

Meghna Das[1*], Jyandip Nath[2]

[1]Assistant Professor, Department of OBGY, Guwahati Medical College and Hospital, Guwahati -781032, Assam, INDIA.
[2]Associate Professor, Department of OBGY, FAA Medical College and Hospital, Barpeta- 781301, INDIA.
Email: drmeghnadas76@gmail.com, drnathknowledge@rediffmail.com

Abstract

Background: Perinatal mortality is taken as an index of the efficacy of the health Care delivery system and also reflects Socio-economic condition and literacy status of the population. Pertaining to a high perinatal mortality in our Institution the present study was under taken. **Objectives:** 1) To find out the incidence of perinatal mortality in our Institution. 2) Proper evaluation of casual factors, to keep the perinatal mortality to its minimum. 3) Synchronization of health care delivery system and its beneficiaries. 4) To initiate protocols for better management of antenatal cases. Arrangement for early referral system to keep a hold on the growing PMR. **Materials and Methods:** A hospital based descriptive observational study was done from January' 2010 to December, 2016. All Perinatal deaths, during the period (January 2010- Dec., 2016) was included in the study. There was 105632deliveries and a total of 5604 perinatal deaths during the period. As per IAP (Indian Academy of Paediatrics) 2014, the current perinatal mortality in India is 28/1000 births. **Results:** Perinatal mortality rate was found to the 53.052 per 1000 births. Still birth rate (Macerated IUD + Fresh still born) was found to be 31.31 per 1000 births. Macerated IUD Rate was 30.84 per 1000 births**.** Fresh Still Born rate was 0.473 per 1000 births**.** Early Neonatal death rate (NICU Death < 7 days of birth) was 21.41/1000 births. Cot death rate was 0.921 per 1000 birth. Factors responsible for such high PMR was antepartum hemorrhage PIH, severe pre-eclampsia, preterm labour, IUGR, malpresentation u8terine rupture etc. **Conclusion:** Holding mass awareness programs for the need of quality antenatal check ups by specialist, availability of early referral system by identifying the at risks cases, provisions of NICU Facilities at all FRU's are prerequisites to bring down the perinatal mortality rate.

Key Words: Perinatal death/ Perinatal mortality/Fresh Stillborn/ Still birth/Cot death/IUD./ NICU.

[*]**Address for Correspondence:**
Dr. Meghna Das, Assistant Professor, Department of OBGY, Guwahati Medical College and Hospital, Guwahati -781032, Assam, INDIA.
Email: drmeghnadas76@gmail.com
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INTRODUCTION

Perinatal mortality remains one of the best heath marker worldwide. The pride of the nation of being one of the fastest growing in terms of economic scientific and matters pertaining to lifestyle and civilization is far away when it is judged in terms of quality of healthy life experienced by the citizens. It also reflects the socio-economic condition and literacy status of the community. Perinatal mortality rate in developing countries are 3-5 fold higher than in the developed countries. The current Perinatal mortality rate in India is 28/1000 births Still births- 5/1000, early neonatal deaths - 23/1000 as per Indian Academy of Paediatrics 2014. This hospital based study was undertaken to realize the causes of Perinatal mortality and to help in its prevention. A seemingly high perinatal mortality rate in our institution over the past years has evoked a great concern to conduct the study.

MATERIALS AND METHODS

A Prospective Hospital Based Descriptive Observational Study was done from January 2010 to December 2016. Perinatal mortality were calculated per 1000 births.

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Perinatal deaths were further analyzed in terms of macerated IUD (from 28th week GA)/ Fresh stillborn/ NICU deaths till 7th day of birth (early neonatal death)/ cot death and casual factors responsible for such deaths were evaluated. Similarly fresh stillborn rate, NICU death rate, cot death rate, IUD rate were calculated per 1000 births. Maternal details like, age, parity, cases registered (minimum 4 ANCS) and unregistered (< 4 ANCS) were noted. Mode of delivery, gestational age and birth weight of fetuses were recorded. Mode of delivery, socio-economic condition (low socio-economic < Rs. 2500 and the literacy status of the mother were also noted. Population distribution whether belonging to Rural/ Urban settlements were noted. Also the numbers of referred cases were recorded.

RESULTS

During the study period, from January 2010 to December 2016, the average perinatal mortality was found to be 53.052 per 1000 births, stillbirth rate (Macerated IUD + Fresh still born) was 31.31 per 1000 births, Macerated IUD rate 30.84 per 1000 births, NICU death (early neonatal death ≤7 days of birth) 21.41 per 1000 births, fresh still born rate was. 473, Cot death rate was. 921 per 1000 births. Congenital malformation were noted in 308 cases. Corrected mortality rate is 50.13 per 1000 births (total perinatal death- number of congenital malformation cases). Amongst the perinatal deaths abruptio was found to be the commonest casual factor responsible followed by PIH, severe pre-eclampsia, placenta previa, congenital malformation, preterm labour, maternal infection, Severe IUGR (LBW), uterine rupture, Eclampsia, malpresentation, obstructed labour, GDM, Immune hydropse cord prolapse. Again PIH was the predominant casual factor in these abruptio placentae cases holding PIH to be the dominant factor responsible for perinatal deaths in the present study. Early neonatal deaths (NICU deaths ≤ 7 days of births) (n 2262) were analysed Hyaline membrane diseases, Meconium aspiration syndrome, Severe birth asphyxia Sepsis (Early+Late onset sepsis). Neonatal hyperbilirubinemia, congenital malformation, pulmonary hemorrhage were the most commonest responsible factors.

Table 1: Perinatal mortality rate and still Birth rate

Description	Number
Total Delivery	105632
Total Perinatal deaths	5604
PNMR	53.052 (per 1000 births)
Total Still Birth (Macerated IUD + fresh still born)	3308
Macerated IUD (still births)	3258
Fresh stillborn	50
Still Birth rate	31.31 (per 1000 births)
Total early neonatal deaths (NICU deaths ≤ 7 days of births)	2262
COT Deaths	34
Congenital Malformation	308
Corrected perinatal mortality rate (Total perinatal death – congenital malformation)	50.13 (per 1000 births)

Table 2: Characteristics of Women

Details	Number	Percentage
Unregistered	4601	82.1
Registered	1003	17.9
Maternal Age		
< 20 years	605	10.8
20-30 years	4612	82.3
>30 years	387	6.9
Gravidity		
Primi gravid	2253	40.2
Multi- gravid	3351	59.8
Illiterate	3026	54
Low Socio-economic (<Rs. 2500/month)	3362	60

Table 3: Mode of delivery and Perinatal deaths

Mode of delivery	Perinatal death	Percentage
LSCS (n=49791)	1225	2.46
SVD (n=52362)	4165	7.95
Forecepe (n=2687)	118	4.39
Ventouse (n=792)	96	12.12

Commonest mode of delivery was by vaginal route n 52362. 1225 perinatal death cases were recorded with LSCS, mostly when conducted in the late referral cases in already compromised foetus. High perinatal mortality was noted with instrumental delivery, specially with Ventouse 12.12% in the present study.

Table 4: Birth weight and perinatal mortality

Birth weight (Kg)	Number	Percentage
< 1000	1121	20%
1000-1499	1793	32%
1500-2499	2118	37.8%
> 2.5	572	10.2%

Table 5: Gestational age and perinatal mortality

Gestational age	Number	Percentage
28- 37 weeks	3800	67.8
> 37 - ≤ 40 weeks	1530	27.3
> 40 weeks	274	4.9

Table 6: Residence and perinatal mortality

Residence	Number	Percentage
Rural	3284	58.6%
Urban	2320	41.4%

Table 7: Referral cases and perinatal mortality

	Number	Percentage
Referral cases	1447	25.82

Of 5604 perinatal death n 1447 were referred from the periphery most of these cases were due to late referral due to lack of monitoring and neonatal care facilities.

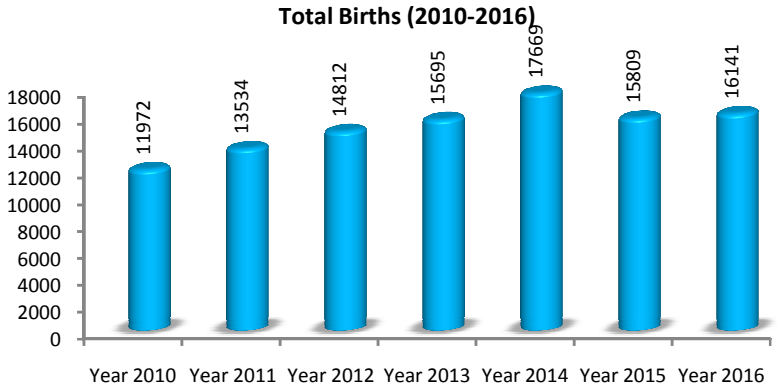
Table 8: Causes of Perinatal deaths n 5604

Cause	Number	Percentage
Abruptio placentae	1810	32.3
Unknown factors	1065	19
PIH + Severe preclampsia	880	15.7
Congenital anomalies	308	5.5
Placenta previa	221	3.94
Birth asphyxia	185	3.3
Preterm labour	235	4.2
Maternal infections	146	2.6
Severe IUGR	191	3.4
Uterine rupture	123	2.2
Malpresentation	58	1.03
Obstructed labour	39	0.7
Eclampsia	157	2.8
Gestational diabetes	78	1.4
Immune hydrops	73	1.3
Cord prolapse	45	0.8

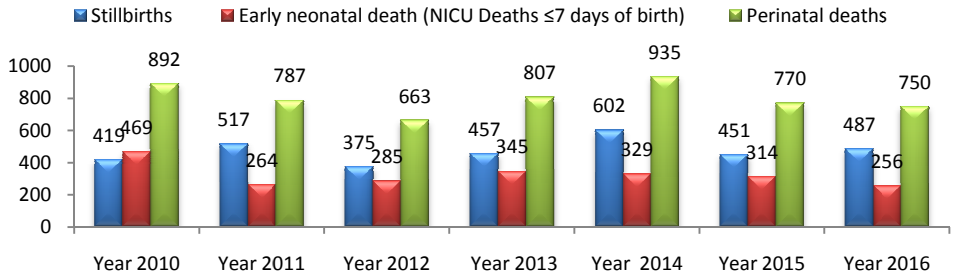
Table 9: Early Neonatal deaths (NICU Deaths ≤7 days of births) n2262

Causes	Number	Percentage
Hyaline Membrane disease	588	26
Meconium aspiration syndrome	543	24
Severe Birth Asphyxia	430	19
Sepsis (EOS +LOS)	249	11
Neonatal hyper bilirubinemia	271	12
Congenital malformation	45	2
Pulmonary hemorrhage	136	6

Number of congenital malformation cases in the present study (n308) accounting for 5.5% of total perinatal deaths of which (n 45) expired in NICU. Most common malformations were NTDs, hydrocephalus, Anencephaly, Omphalocele and USG diagnosed cases, cardiac defects and GI tract anomalies.



Comparison of stillbirth, Early Neonatal death, Total perinatal death over the past 7 years (from 2010 to 2016)



PMR in 2010 was 74.50/1000 births. In 2016 PMR is 46.46/1000 births.

Table 10: Year wise distribution of Perinatal deaths

Year	2010	2011	2012	2013	2014	2015	2016
Cot death	4	6	3	5	4	5	7
Fresh Still born	7	9	8	6	5	6	9
Macerated IUD	412	508	367	451	597	445	478
Early neonatal death (NICU Deaths ≤7 days of birth)	469	264	285	345	329	314	256
Perinatal deaths	892	787	663	807	935	770	750
Perinatal mortality rate (per 1000 births)	74.5	58.14	44.76	51.41	52.91	48.70	46.46

DISCUSSION

Perinatal mortality is a nightmare to both the mother and the Obstetrician. Despite so many efforts by the heath care delivery system (Both private and Government agencies) perinatal mortality rate continues to be high. The PMR in the present study were high 53.052 per 1000 births which was comparable to studies [123678]. Out of 5604 perinatal deaths n 4601(82.1%) cases were unregistered. Most of the women were in the age group of 20-30 years n 4612. 54% of the women were illiterate. 60% belonged to low Socio-economic group (< 2500/month) as compared to the studies[1-2]. Perinatal mortality was high with Multi-gravida (n 3351) than in primi gravid n 2253. This is because of poor monitoring and lack of ANCS. Similar results were reflected in study in JM Medical College, Karnataka from Dec, 2007 to May, 2009 and also in the studies[2,7,11,13]. Perinatal mortality was found to be high in preterm cases 28- ≤37 weeks n 3800 as compared to a study in Orissa SCB Medical College, Orissa. A 10 years review in perinatal mortality which showed a similar report. As also noted in a study prevalence and factors influencing perinatal mortality in Rural Mysore, India in 2013 Only 3% (n1530) were term pregnancies and (n 74) 4.9% was post term pregnancies in the present study. LBW is an important cause of perinatal mortality in the present study also noted in the studies[1,2,3,4,6,8,9,10]. The factors responsible can be identified in their antenatal visits for timely intervention and thereby reducing the incidence of LBW and thereby decreasing perinatal mortality. Abruptio, PIH, severe pre-eclampsia were the leading factors of perinatal deaths in the present study. Also noted in studies[1,2,3,6,7,8,12,14]. Abruptio although the commonest factors in the present study, most of those cases again had severe PIH or pre-eclampsia, holding PIH to be the major factor responsible for perinatal mortality. Amongst the early neonatal death (NICU death ≤ 7 days of birth) factors responsible was hyaline membrane disease, Meconium aspiration syndrome, severe birth asphyxia, neonatal hyper bilirubinemia, sepsis, pulmonary hemorrhage etc. Similar factors responsible in studies[1,2]. Cot death n 34 were noted in the present study cause of cot death may be due to hypothermia, hypoglycemia, suffocation from pressure effects and aspiration due to faulty feeding habits. As also noted in study the perinatal mortality in a referral hospital of Orissa (a 10 years review). Perinatal deaths were more common in the rural population (n 3284) than in the urban population (n 2320). Congenital anomalies (n 308) cases were recorded. Most common congenital anomalies were NTDs hydrocephalus, anencephaly, Omphalocele, cardiac defects, GI tract anomalies. Corrected perinatal mortality was 50.13/1000 births. The still birth rate (Macerated IUD + Fresh still born) was 31.31 per 1000 births in comparison to 43/1000 births in J.N. Medical College Karnataka in a study conducted in Dec 2007 to May 2009 as per 2014 reports present still birth rate is 5/1000 births (IAP, 2014). The reason behind such a high rate in our Institution as because our Institution is a referral hospital. In 2002 National PMR was 60 per 1000 births when a 10 years review in perinatal mortality was done in a referral Hospital, Orissa. A high rate of 70.2/1000 births was seen in the study. In 2009 National PNMR in India was 49/1000 births when in a study in JN Medical College, Karnataka it was 49.4/1000. A still higher rate of 80.66/1000 births was seen in a 2 years study at gold field Institute of' Medical Sciences and research, a tertiary care centre, Faridabad, Haryana in 2014. The National PMR in 2014 as IAP(Indian Academy of Paediatrics) was 28/1000 births. Still birth rate 5/1000 births, early neonatal death 23/1000 births. Kerala shows a very low perinatal mortality rate 10/1000 births and Orissa 37/1000 births. In the present study PMR in 2010 was 74.5/1000 births and in 2016 PMR was 46.46/1000 births. This fall in PMR can be attributed to various schemes under NRHM. Janani Suraksha Yojana, Janani Sishu Suraksha Karyakram, Home base newborn care have contributed greatly in this regard.

CONCLUSION

Restrengthening of health care delivery system at the periphery is the key step in achieving our goal. Antenatal checkup by specialist, arrangement for proper functioning operation theatre with a good anaesthetic team with well stocked blood bank and above all arrangement of NICU set up supported by a good paediatric team at all FRU's are mandatory in achieving our goal. Improving literacy rate and socio-economic condition of the people will definitely be rewarding in bringing down PMR. Holding mass awareness programs for the need of quality antenatal checkups by specialist, availability of early referral system by identifying the at risks cases, provisions of NICU Facilities at all FRU's are prerequisites to keep a check on the growing perinatal mortality rate.

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