

## ORIGINAL ARTICLE

## Study of Factors Affecting Perinatal Mortality at A Tertiary Care Centre of Western India

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**Background:** Perinatal rather than maternal deaths are now used as an index of the quality of maternal care. Perinatal mortality rate is the key indicator of the health status of a community. It specifically reflects the quality of prenatal, delivery and early infant care practices available in any setting. **Objectives:** To determine incidence of perinatal mortality in the hospital and to study the antepartum, fetal, intrapartum causes of perinatal mortality, effect of birth weight (low birth weight babies as compared to normal birth weight babies, importance of antenatal care, effect of mode of delivery, effect of maternal age on perinatal mortality. **Material and Methods:** A Retrospective study was carried out from 1<sup>st</sup> November 2016 to 30<sup>th</sup> September 2018 (23 months) in the department of OBGY in a tertiary care hospital. In the study all still births (above 28 weeks gestational age) and all neonatal deaths that occurred in the first 7 days of life were taken into consideration. In this study all still births (above 28 weeks gestational age) and all neonatal deaths that occurred in the first 7 days of life were taken into consideration. **Results:** Total perinatal deaths during the study were 1039. Perinatal Mortality Rate was 66.73 per 1000 total births. Still birth rate was 34.87 per 1000 total births and early neonatal death rate was 33.00 per 1000 live births. **Conclusion:** Antenatal care was found to be a significant factor in perinatal deaths. Perinatal deaths were seen to be higher in babies with birth weight lesser than 2.5kg. PIH was found to be commonest ante partum cause of perinatal deaths.

**Key words:** Antenatal Care, Early Neonatal Deaths, Perinatal Mortality Rate, Pregnancy Induced Hypertension, Still Births.

**Introduction:**

The Perinatal period encompasses the time frame from 28-Weeks of gestational age to the first 7 days of postnatal

life. Perinatal mortality refers to death of a fetus or neonate in the perinatal period and is the basis to calculate the perinatal mortality rate (PMR) [1]. Perinatal mortality equals to the sum of still birth and early neonatal death. Perinatal rather than maternal deaths are now used as an index of the quality of maternal care. New-borns die because of poor maternal health, inadequate care during pregnancy, inappropriate management during delivery and the first few hours of life and lack of new born care. Perinatal mortality is the key indicator of the health status of a community. It specifically reflects the quality of prenatal, delivery and early infant care practices available in any setting [1]. During the past few decades advancements of curative services and various health interventions have been made and these have made the world a safe place to live in but the focus needs to be drawn towards the world within the womb and antenatal care which has an impact on health and survival of babies not only throughout the first few days of life but also through the first year of life [2,4]. The alarmingly high rate of perinatal mortality in India makes it a major health problem necessitating a precise definition of the factors contributing to its high incidence [5]. The present study was conducted to determine incidence of perinatal mortality of the hospital and to study the antepartum, fetal, intrapartum causes of perinatal mortality, effect of birth weight (low birth weight babies as compared to normal birth weight babies, importance of antenatal care, effect of mode of delivery, effect of maternal age on perinatal mortality.

**Material and Methods:**

A retrospective study was carried out from 1<sup>st</sup> November 2016 to 30<sup>th</sup> September 2018 (23 months) in the department of OBGY at a government tertiary care Centre in Maharashtra, India after ethical clearance from institutional ethical committee. In the study all still births (above 28 weeks gestational age) and all neonatal deaths that occurred in the first 7 days of life were taken into consideration. All cases with fetal deaths after 28 weeks

gestational age till first 7 days of life were included in the study. All cases with fetal deaths before 28 weeks gestation and after 7 days of life. Were excluded from the study. In this study all still births (above 28 weeks gestational age) and all neonatal deaths that occurred in the first 7 days of life which occurred during the study period were taken into consideration. A restructured proforma was used for collection of data. Proforma included detailed antenatal history, past history, personal history and family history of the mother, general examination, systemic examination, abdominal examination, Per speculum and per vaginal examination of mother, blood investigations, ultrasound findings, antenatal complications, fetal complications, mode of delivery, labour complications, duration of labour, puerperial complications, baby details. Data of all fetal deaths between 28weeks of gestation to first 7 days of life was collected from the labour room, PNC wards and NICU. After data was collected various factors were noted i.e. whether the pregnancy was booked or not, birth weight, mode of delivery (vaginal/LSCS), maternal age, antenatal risk factors.

**Results:**

Total perinatal deaths during the study were 1039. Perinatal Mortality Rate was 66.73 per 1000 total births. Still birth rate was 34.87 per 1000 total births and Early Neonatal Deaths rate was 33.00 per 1000 live births. Among the perinatal deaths 86.81% were seen in unbooked pregnancies and 13.18% were found in booked pregnancies.

babies cases as compared to babies with normal birth weight.

Table -3: Contributions of LBW Babies to Perinatal Mortality

Birth Weight	Still Births	Early Neonatal Deaths	Perinatal Deaths	Percentage of Perinatal Deaths
<2.5KG	429	392	821	79.01
>2.5KG	114	104	218	20.98

Table-4: Perinatal Mortality Rate In Relation to Mode of Delivery

Mode of Delivery	Total Births	Total Live Births	Still Births	Early Neonatal Deaths	Perinatal Deaths	Perinatal Mortality Rate
Vaginal	10200	9781	419	371	790	77.45
LSCS	5370	5246	124	98	222	41.34

P value <0.001 by Chi Square Test showing significantly more perinatal deaths in babies born by vaginal delivery than those born by Caesarian Section.

Table- 5: Maternal Age and Perinatal Mortality

Maternal Age (Yrs)	Total Births	Total Live Births	Still Births	Early Neonatal Deaths	Perinatal Deaths	Perinatal Mortality Rate
15-19	600	546	54	5	59	98.3
20-24	7550	7257	293	252	545	72.18
25-29	6770	6655	115	34	149	22.00
>30	650	569	81	205	286	440

Low birth weight (LBW) was another factor which contributed nearly 4 times more to perinatal mortality as compared to normal weight babies. This finding was true for both still births and early neonatal deaths. Perinatal Mortality Rate in vaginal deliveries was 77.45 per 1000 total births as compared to 41.34 per 1000 total births in LSCS births. Extremes of Maternal age was found to be another factor influencing perinatal deaths. The maximum number of perinatal mortality was found in maternal age >30 followed by second highest in teenage pregnancies. The mortality in advanced age and teenage pregnancies was significantly more (p<0.001 Chi square test) than in age group of 20-29 years. Among the antepartum factors hypertensive disorders of pregnancy were

Table-1: Still Birth Rate, Early Neonatal Death Rate, Perinatal Mortality Rate

Mortality	Number	Total Births	Rate Per 1000 Births
Still Births	543	15570	34.87
Early Neonatal Deaths	496	15027	33.00
Perinatal Mortality	1039	15570	66.73

Table -2: Percentage-wise Distribution of Perinatal Mortality in Booked/Unbooked Cases

Status	Still Births		Early Neonatal Deaths		Perinatal Deaths	
Unbooked	489	90%	413	83.2%	902	86.81
Booked	54	9.9%	83	11.2%	137	13.18

P value <0.001 by Chi Square Test showing significantly more perinatal deaths in unbooked cases as compared to booked cases. P value <0.001 by Chi Square Test showing significantly more perinatal deaths in low birth weight

Table -6: Causes of Perinatal Mortality

Cause	Deaths	Percent age
Hypertensive disorders of pregnancy	222	21.36
Aph	71	6.83
Severe Anemia	24	2.30
Diabetes	13	1.25
Heart Disease	5	0.48
Rh Incompatibility	11	1.05
Viral Hepatitis	02	0.19
Prolonged Labour	11	10.58
Prom	103	9.91
Obstructed Labour	7	6.73
Cord Complications	38	3.65
Congenital Malformations	168	16.16
IUGR	128	12.31
Post maturity	88	8.46
Prematurity	148	28.22
Birth asphyxia	137	27.62
Respiratory distress syndrome	131	26.41
Undetermined	21	2.02

most common maternal risk factors accounting for 21.36% of perinatal mortality (out of it severe PIH caused 14.1% and eclampsia accounted to 7.21%). Second most common risk factor was APH contributing to 6.83% out of which 4.90% was contributed by Abruptio Placenta and 1.92% by Placenta Previa. Among the intrapartum causes most common cause was preterm births followed by prolonged labour followed by PROM. Other contributing factors were malpresentations with breech presentation being most common, cord complications and obstructed labour. Among the fetal factors, maximum contribution was by congenital malformations amounting to 16.16% followed by IUGR. Other factors were postdatism, oligohydramnios, multifetal gestation. Unknown causes contributed to about 2.02% of perinatal mortality.

#### Discussion:

In this study the perinatal mortality rate was 66.73 per 1000 births. The high perinatal mortality in the present study can be accounted to our hospital being a referral hospital where the patients are being referred with complications from PHC'S and other peripheral hospitals. Secondly the majority of patients coming to our hospital is uneducated and belongs to lower socio-economic group and do not seek proper ANC care. The Perinatal Mortality Rate as reported by various authors is as follows Mangala Shinde et al [3]-83.99 per 1000, Zuochun Wu [4]-69 per 1000, Anne George Cherian et al (2008) [2]-32 per 1000, Kiran Wassan et al [5]-72.71 per 1000. Antenatal care during pregnancy has shown significant influence on

perinatal outcome. Perinatal mortality was higher in those who did not receive proper antenatal care. These findings were consistent with studies of other authors like Mangala Shinde et al [3], Anthony. M. Vintzileos [4] Kiran Wassan et al [5], Samuel Dessu et al [8] Maximum perinatal deaths occurred in low-birth-weight babies. Similar findings were revealed by studies of Mangala Shinde et al [3], S.S. Gaddi et al [6], Ts Raghu Raman [9], Amit Devgan [9], Ankita Zaveri et al [10], Madaj B et al [16], Mahumud RA et al [12] Perinatal mortality was higher in those who delivered virginally than those who underwent cesarean sections. This was consistent with studies by Mangala Shinde [3] et al, and S.S. Gaddi et al [6] Swami Nathan S [11] Teenage pregnancy is a high-risk group for perinatal mortality. Perinatal mortality was highest in women above 30 yrs. This was similar to results of studies by Mangala Shinde [3], Das Lucy [7], Roro EM et al [17] [18], Mahumud RA et al [12] Hypertensive disorders of pregnancy were major ante partum risk factors for perinatal mortality. Similar results were noted by S.S. Gaddi [6], Das Lucy and Sujata et al [7]. Other leading risk factors were prematurity and birth asphyxia and respiratory distress syndrome amongst intrapartum risk factors followed by congenital malformations being the most common fetal factor.

#### Conclusions:

In this study Perinatal Mortality Rate was 66.73 per 1000 births. Still birth rate was 34.87 per 1000 births and the early neonatal death rate was 33.00 per 1000 live births. Perinatal deaths were more in unbooked pregnancies than in those pregnancies which were booked and had regular antenatal visits to the hospital emphasizing the importance of good antenatal care and regular antenatal visits, mortality was more in low birth weight babies. More perinatal deaths were noted in vaginal births as compared to lower segment caesarian sections. More perinatal deaths were recorded in babies born to mothers with extremes of age. Maternal age >30 (440 per 1000 births) followed by second highest (98.3 per 1000 births) in teenage pregnancies. Hypertensive disorders of pregnancy was most common maternal risk factor for perinatal mortality (out of it severe PIH caused 14.1% and eclampsia accounted to 7.21%) followed by APH contributing to 6.83%. Commonest intrapartum cause was preterm births (71.64%) followed by prolonged labour (10.58%) followed by PROM (9.91%). Commonest fetal factor was congenital malformations amounting to 16.16% followed by IUGR (12.31%).

**Conflict of Interest-**Nil

**Sources of Support-**Nil

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