



ESTIMATION OF PERINATAL MORTALITY AT A TERTIARY CENTRE AND MATERNAL FACTORS CONTRIBUTING TO PERINATAL MORTALITY—A PROSPECTIVE STUDY

Gynecology

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ABSTRACT

Perinatal mortality is an index of efficacy of antenatal, intrapartum care and reflects socioeconomic condition of the community. More than 5 million perinatal deaths occur globally, majority in the so called developing countries including India. Reducing preventable stillbirths and neonatal deaths continue to be a part of International Public Health agenda in the coming future.

This hospital based study was undertaken to know the causes of perinatal mortality and identify the preventable causes.

AIM: To estimate the perinatal mortality at a tertiary health centre and maternal factors contributing to perinatal mortality.

To identify the preventable causes of perinatal mortality and offer valid solutions to reduce the incidence of perinatal mortality.

METHODS: Women delivering at IMCH, Government Medical College, Kozhikode, with birth weight of > 500gm /gestational age > 22 weeks over a period of 1 year (Jan 2015-Dec 2015) were included in the study. Death of all fetuses weighing 500gm or more at birth or within first week of neonatal period is taken as perinatal death.

Data collected included maternal age, parity, religion, socioeconomic status, education level, gestational age, antenatal care received by woman, antenatal, intrapartum complications, mode of delivery, obstetric outcome.

RESULTS: Perinatal mortality rate in present study is 33.5/1000 live births. Still birth rate is 20.3/1000, neonatal mortality rate is 13.6/1000, and corrected perinatal mortality rate is 15.6/1000. Perinatal mortality rate is higher in extremes of age, optimal age group for good obstetric outcome is 20-30 years. Prematurity and low birth weight babies constituted 94.2% of perinatal deaths. Other major risk factors were Preeclampsia (26.2%), Gestational diabetes(22.7%), Abruption (7.6%) and Anemia. Birth asphyxia contributed to 13% of neonatal deaths. Vaginal breech delivery had higher mortality rates. Congenital anomalies accounted for 11.7% of all perinatal deaths.

CONCLUSION: Perinatal mortality is akin to the iceberg tip where much of the real issues affecting the neonate is hidden and only a part is visible. Neonatal morbidity, persistence of poor health of baby is continued into childhood and is manifested later in adult years as a poor performance individual. To ensure birth of a healthy baby, it is essential to ensure a healthy woman who is physically and mentally fit to carry her pregnancy to deliver a healthy baby. This is possible only with improved female education, accessible antenatal care, early identification of adverse antepartum conditions as preeclampsia, close monitoring of high risk pregnancies, prompt referral to centres with improved neonatal facilities.

KEYWORDS

Mesh terms Perinatal death, prematurity, birth asphyxia, antenatal care, still birth, preeclampsia.

INTRODUCTION:

Perinatal mortality indicates the index of standard of both maternal and perinatal services available to women of the community. It is an indirect indicator of the level of obstetric care and quality of available perinatal resources. Problems of perinatal mortality is multifactorial, it involves antenatal, intrapartum and neonatal period.

AIM:

To estimate the perinatal mortality at INSTITUTE OF MATERNAL AND CHILD HEALTH ,GOVERNMENT MEDICAL COLLEGE, KOZHIKODE.

To identify the causes of perinatal deaths, offer plausible solutions to reduce the perinatal mortality.

STUDY DESIGN:

Hospital based cross sectional study.

STUDY SETTING:

Labor room and newborn unit- Govt Medical College, Kozhikode.

STUDY SUBJECTS:

All perinatal deaths in IMCH during study period.

INCLUSION CRITERIA:

Patients delivering at IMCH Kozhikode with birth weight of > 500gms or gestational age > 22weeks are included in the study. Death of all fetuses weighing 500gms or more at birth, occurring either during pregnancy or labor or within first week of neonatal period was taken as perinatal death.

EXCLUSION CRITERIA:

Patients delivering outside IMCH, but referred to IMCH after delivery will not be included in study.

STUDY PERIOD:

January 2015-December 2015

SAMPLE SIZE:

With a perinatal mortality of around 60/1000 in previous years, to detect current level with an error margin of +/-5/1000, the sample size required to achieve this level at 95% confidence was 7975 (as per Stat Calc software).

METHOD OF DATA COLLECTION:

Data will be collected from parturition register, maternal and baby case sheets. Collecting data included maternal age, socioeconomic status, nature of antenatal care, past obstetric history, antenatal and intrapartum complications, mode of delivery, birth weight, APGAR score.

Every data was collected, each subject was followed up in postnatal ward and newborn ward if baby was admitted. Direct interview of subjects was done if needed in special cases.

BUDGET OF STUDY:

No extra expense is incurred by the patient.

DATA ANALYSIS:

Data is entered into excel sheet and analyzed using SPSS software. The qualitative data is expressed in proportions and quantitative data is expressed as means and standard deviations. The significance of the results will be assessed using appropriate tests of significance.

STATISTICS:

Statistical analysis was performed using chi-square test and fisher's exact test. Statistical significance was assumed at a p value of < 0.05.

ETHICS CONCERN:

INSTITUTIONAL ETHICS COMMITTEE, Govt Medical College, Kozhikode has given approval for conduct of this study on 17/12/2014.

RESULTS and OBSERVATIONS:

During the one year of study period, from January 1, 2015 to December 31, 2015, there were 15660 births at Institute of Maternal and Child

Health, Calicut. Perinatal deaths (PND) during the study period were 598 including intermediate and late stillbirths and early neonatal deaths (NND). Out of this, 375 were intrauterine demises(62.71%), 233 early neonatal deaths (37.29%).

Among the intrauterine deaths, 112 were fresh still births (FSB), (30%) and 263 were macerated still births (MSB) accounting for 70%.

1. Perinatal Mortality Rate (PNMR) for late fetal deaths and early neonatal deaths weighing 1000gm.
Number of births > 1000gms=15575
Number of perinatal deaths=552
PNMR/1000 births=35.5/1000
2. PNMR according to Maternal Age Maximum number of deliveries were in 20-34 age group (88.5%). PNMR was least in this group. With p value <.001, PNMR was increased and statistically significant in teenage mothers and the elderly (>35 years).
3. Education and PNMR

TABLE 1: Education and perinatal mortality

Education Level	Total Deliveries	Perinatal Mortality(PND)	PND/1000 births
Illiterate	1500	51	34/1000
LP and UP	4700	292	62.7/1000
HS and above	9480	252	26.6/1000

P value <.05

Perinatal mortality was much lower in those who had high school education or more, compared to those with lesser education, showing importance of female literacy and resulting better compliance to medical advice.

4. Parity and PNMR

PNMR is high in primi para and in para 3 or more. This is statistically significant (p value <.05)

5. BOOKING and PNMR

In unbooked category (those with no ANC or ANC elsewhere), the PNMR was very high, statistically significant (p value <.0001)

6.PAST OBSTETRIC HISTORY and PERINTAL OUTCOME

TABLE : 2 Past Obstetric History and Perinatal mortality

Obstetric History	Total Deliveries	PND	PND/1000 births
BOH	520	62	119.2/1000
NO BOH	15140	536	35.4/1000

P value <.001

Those with previous BOH in the form of 3 or more abortions, term IUD, unexplained neonatal death etc had an adverse perinatal outcome which is statistically significant.

7. GESTATIONAL AGE and PNMR

TABLE: 3 Gestational age and perinatal loss

GA in weeks	Total deliveries	PND	PND/1000 births
<27.6	112	97	866.07/1000
28-31.6	322	138	428.5/1000
32-36.6	1423	332	233.4/1000
>37	13803	31	22.4/1000

P value <.001

This table shows that as gestational age increases perinatal mortality decreases with least perinatal loss in term babies, is statistically significant, and clearly shows the adverse influence of prematurity on perinatal mortality.

8. MULTIPLE PREGNANCY and PNMR

PNMR is five times higher in multiple pregnancy than singletons, p value <.001 which is statistically significant.

9. ANTENATAL COMPLICATIONS and PNMR

TABLE : 4 Antenatal Maternal Complications and perinatal deaths

COMPLICATI ONS	Total Deliveries	PND	PND/1000 births	P value
Pre-eclampsia	614	157	255.7/1000	
a. Nonsevere	73(.047%)	32	43.8/1000	<.001
b. Severe PE & Eclampsia	376(2.4%)	166	368/1000	
c. With HELLP	74(.84%)	45	494/1000	
GDM	2086(13.59%)	136	65.1/1000	<.001
IUGR	218	38	174.3/1000	<.001
Oligamnios	240	16	66.6/1000	<.05
Polyhydramnios	56	15	267/1000	<.05
AFLP	4	1	250/1000	Fischer's extract test done, significant
Heart disease	158(1.02%)	7	44.3/1000	.128

Perinatal mortality is thrice that in general population. Even among pre-eclampsia, severe form had three times higher perinatal deaths. HELLP had five times higher incidence of perinatal mortality.

Gestational Diabetes caused a perinatal mortality rate twice that of general population. As was also seen in cases of fetal growth restriction , which is statistically significant.

Jaundice and epilepsy also had increased perinatal deaths, but maternal heart disease did not show increase in perinatal deaths in this study.

ANEMIA is an important contributory factor to raised PNMR. There were 2853 cases of anemia (18.58%) in this study. The PNMR was increased in severe anemia which was statistically significant (p value <.001)

10. There was no increase in PNMR in those women who had induction of labor.

11. Vaginal breech delivery had highest PNMR (328.8/1000), Vaginal cephalic delivery- PNMR (39.7/1000), Instrumental delivery-PNMR (7.5/1000), LSCS- PNMR (31.6/1000).

SUMMARY and CONCLUSIONS:

The perinatal mortality in this study is 33.5/1000 births and extended perinatal mortality is 38.18/1000 births. This is high when compared to rates in developed countries; but much lower than the national perinatal mortality rate.

Still birth rate is 20.3/1000; neonatal mortality rate is 13.6/1000 births.

Perinatal mortality was raised in mothers of extremes of age, 20-30 age group had least PNMR.

STRATEGIES RECOMMENDED TO REDUCE PNMR

1. Improve female literacy, strict laws to prevent underage marriages of teenage girls.
2. Strengthen primary health centres and peripheral government antenatal services.
3. Regular CMEs to make health providers aware about newer trends in management of high risk pregnancies
4. Early identification of at risk pregnancies and prompt referral to higher centres.
5. Meticulous intrapartum monitoring of high risk cases with partogram and CTG.
6. Establishment of coordinating committees of different disciplines especially neonatologists and pediatricians and formulating measures to treat high risk mothers.
7. Confidential enquiry into perinatal deaths and perinatal auditing with particular emphasis on fetal autopsy.

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