

A STUDY OF PERINATAL MORTALITY AT SAFDARJUNG HOSPITAL, NEW DELHI

by

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Perinatal mortality is a parameter of obstetric services and standard of neonatal care in the early days of life.

Perinatal period is defined by various workers differently. Perinatal mortality rate (PNMR) is also given by some workers as the number of perinatal deaths per 1,000 live births, by others as number of perinatal deaths per 1,000 deliveries. In our study, we have taken perinatal mortality as death of the foetus occurring at any time after 20 weeks of gestation to 7 days of life. It constitutes a significant problem accounting for the perinatal death rate of 76.7/1,000 live births. The present study had been undertaken to assess the gravity of the problem in this area and to devise suitable remedial measures to bring down the PNMR.

Safdarjung Hospital is a referral centre where patients come in a morbid state

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from the rural areas and far off maternity centres of other districts within a radius of 30 Km.

In this paper we report the results of the study for the four year period from 1975-1978. In each year, the trend of perinatal mortality has been practically the same. During this period a total of 33747 births of more than 450 gms occurred (Table I), the number of live births being only 32527. Six hundred and eleven cases of perinatal deaths occurring from Jan. 1978 to Dec. 1978 have been studied in greater detail. These deaths relate to 8239 deliveries, of which only 7961 were live births giving the incidence of perinatal deaths as 70.6/1,000 deliveries and 73.1/1,000 live-births; the latter comprising still birth rate of 41.7/1,000 live birth and early neonatal death rate of 31.4/1000 live births.

Observations

Relationship of Antenatal Booking

62.2% of the cases attended antenatal clinics. 50% of these attended the clinic only once or twice. 38.8% of the cases came to the hospital for the first time only in labour (Table II).

TABLE I
Deliveries, Live Births, Still Births and Neonatal Deaths During 1975-1978

	1975	1976	1977	1978
1. Total No. of deliveries after 20 weeks of gestation	10182	7416	7910	8239
2. No. of live-births	9654	7267	7645	7961
3. No. of still births	255	270	313	332
4. No. of neonatal deaths	450	268	249	250
5. Total No. of perinatal deaths	705(7.0)*	538(7.4)*	562(7.3.5)*	611(7.3.1)*

* Figures in parentheses represent PNMR/1000 live-births.

TABLE II
Booked and Unbooked Cases

Year	Total No. deliveries	Booked cases	Unbooked cases	% of the unbooked cases
1975	10182	6374	3808	37.41%
1976	7416	4526	2890	38.97%
1977	7910	5074	2836	35.85%
1978	8239	5121	3118	37.84%

Relationship of Age and Gestation

98.7% neonatal deaths occurred amongst the babies born before or at 28 weeks of gestation. This incidence declined as the period of gestation increased to 41 weeks, the curve touching the ebb of 10.3% at 37-41 weeks and showing a rising trend again in the group of 42 weeks and above (Table III).

TABLE III
Relationship of Age of Gestation With Perinatal Deaths

Gestational age in weeks	No. of admissions in the nursery	% of deaths
Less than 28 wks.	80	98.7%
29 to 32 wks.	167	65%
33 to 36 wks.	525	32%
37 to 41 wks.	1335	10.3%
42 wks. and above	40	17.5%
Unknown	41	31.7%

Relationship of Maternal Age and Parity to Perinatal Deaths

It was observed that perinatal death rate was highest when the age of the mother was above 40 years and lowest when it was between 20-29 years. Among all the parities the lowest perinatal death rate was found in 2nd pregnancy and highest in 4th or 4+. However, PNMR was more in primi as compared to the 2nd pregnancy. Illegitimacy does not have any impact on PNM because an unmarried mother who is above 20 weeks of gestation is not permitted to have MTP done. She may be admitted to the hospital till delivery only on social grounds. In this way she gets rather an intensive antenatal care.

The incidence of perinatal death has been found to be inversely proportional to the weight of the baby at birth. PNMR was 88% when the weight of the baby was 1000 gms or less. This rate decreases

ed to 3% amongst the babies of 3501 to 4000 gms. However, the increase in tendency to 5% has been observed when the baby weighs 4001 gms or more; low baby birth weight is more common in patients of lower socio-economic group i.e. in case of young, undernourished, chronically ill women or those having short interval between two successive deliveries (Table IV).

TABLE IV
Relationship of the Weight of the Baby at Birth to PNMR

Weight in gms	No. of admissions	% of deaths
Less than 100 gms	75	88%
1001-1500 gms	275	61%
1501-1900 gms	469	25%
1901-2000 gms	130	18%
2001-2500 gms	476	17.3%
2501-3500 gms	666	8.2%
3501-4000 gms	67	3%
4001 gms & above	30	5%

Effect of Antepartum Haemorrhage

One hundred and sixty one mothers gave the history of vaginal bleeding, of which 102 cases were of placenta praevia and 42 of accidental haemorrhage. In all such cases, the incidence of perinatal death was 9-10 times higher than those having no vaginal bleeding during pregnancy or labour. The foetal loss rate was also significantly higher, approximately four times more, than the early neonatal death rate.

Effect of Pre-eclamptic Toxaemia and Eclampsia

Six hundred and fifteen mothers had PET and 40 eclampsia. The incidence of PNM was 19.3% in PET cases and 75% in eclampsia patients.

Effect of Pre-mature Leaking of Membranes

It has been observed that PNMR and

incidence of pulmonary infection in babies is higher in patients who had leaking of membranes for more than 24 hrs. However, leaking of less than 24 hrs duration did not seem to have any significant effect on the PNMR.

Effect of Intra-uterine Growth

The PNMR is closely dependent upon the foetal growth. The study cases included pre-term, term and post-term cases. Amongst the pre-term and post-term births the PNMR was highest for the SFD (small for-date), whereas for term babies it was so for IUGR (intra-uterine growth retardation) group.

However, the PNMR of pre-term SFD group was 8 times higher to the term group and the 3 times higher to the post-term group, the trend being similar in case of IUGR birth as well. It is appropriate to report that of all the four groups studied PNMR is the lowest in the term babies, the rate being 11.1% for an appropriate gestation age group (AGA) Table V).

TABLE V
Relationship of Intrauterine Growth to PNMR

	No. of admissions	% of deaths
<i>Preterm</i>		
—AGA	548	50%
—IUGR	184	41.3%
—SFD	25	68%
—LFD	2	100%
<i>Term</i>		
—AGA	957	11.1%
—IUGR	233	12.8%
—SFD	71	8.5%
—LFD	48	2%
<i>Post-term</i>		
—AGA	7	14.2%
—IUGR	4	25%
—SFD	4	50%
—LFD	2	20%
Unknown	105	—

Perinatal Deaths and Autopsies Studies

In 917 cases of perinatal deaths, autopsy was done to establish the cause of death. In 24.34% cases asphyxia was the most important cause of death, whereas 17.25% and 7.10% deaths occurred due to intrapartum and antepartum anoxia respectively.

The second main cause was the pulmonary distress like pneumonia. Hyaline membrane disease accounted for 3.17% and pulmonary haemorrhage for 4.26% deaths.

In 12.66% cases, the cause was found to be congenital malformation. Cerebral birth trauma was responsible for about 13% of deaths, of which 6% were on account of anoxia. Infection was the cause of death in approximately 7% of the cases and septicaemia in another 8% of deaths. No definite cause could be assigned to

deaths in 22% of the cases. As compared to the causes of foetal and neonatal deaths according to autopsy report it was noted that asphyxia was the leading cause of foetal death in 41.42% but it was only 12.6% in neonatal deaths. Foetal deaths due to pulmonary conditions (30%) was almost 6 times more than the neonatal deaths. Cerebral birth trauma was 3 times more and infections were seen to be responsible for deaths only in early neonatal period (Table VI).

*Correlation of Necropsy and Clinico-pathological Causes of Perinatal Deaths**Asphyxia*

(1) APH cases	33.7%
(2) Mechanical	23.9%
(3) Toxaemia of pregnancy	16.8%
(4) Maternal diseases	11.4%
(5) Cause not known	10.3%

TABLE VI
Autopsy Causes of Deaths

Autopsy causes of death	% of total foetal deaths	% Neonatal deaths	% Total perinatal deaths
1. <i>Asphyxia</i>	41.42	12.66	24.35
(1) Antepartum	13.90	2.61	7.10
(2) Intrapartum	27.52	10.06	17.25
2. <i>Pulmonary</i>	5.18	30.17	20.09
(1) Pneumonia	3.81	16.76	11.46
(2) Hyaline membrane disease	—	5.21	3.17
(3) Pulmonary haemorrhage	0.82	6.33	4.26
(4) <i>Malformation</i>	16.35	10.24	12.66
(i) CNS	9.81	3.35	5.90
(ii) GIT	—	0.98	0.55
(iii) Cardiac	—	0.98	0.55
(iv) Renal	1.09	0.93	1.09
(v) Multiple	5.4	4.10	4.59
(5) <i>Cerebral birth trauma</i>	5.45	17.32	12.34
Without Asphyxia	3.27	9.31	6.77
With Asphyxia	2.18	8.01	5.57
Infections	—	10.43	6.67

All the above factors from 1 to 4 are preventable i.e. 90% of the causes are preventable by good antenatal, intranatal and early neonatal care.

Cerebral birth trauma

32.8% deaths were due to mechanical causes. Perinatal mortality rate of 76.7/1000 live births is rather very high. From 1968-1972 a study in Safdarjung Hospital revealed the perinatal mortality rate as 75/1000 deliveries, whereas in 1978, it showed a decline to 73.6/1000 deliveries, thus decreasing the PNMR by 1.4/1000 deliveries.

Management

Majority of the above mentioned factors are preventable. Conservative treatment of placenta praevia till 37 wks, timely diagnosis and treatment of PET, early detection of anaemia and its treatment, effective control of diabetes, early diagnosis of multiple pregnancy, advising rest in third trimester, more proteins, iron and folic acid in the diet, testing blood for STS, blood group and Rh factors giving anti-D to Rh -ve mother if she has delivered a Rh +ve child, timely induction of labour should be done only when one is sure about the maturity of foetus or is absolutely essential. Post maturity and prolonged labour can be avoided by active interference.

Still there are cases of congenital malformations and placental insufficiency of unknown origin about which nothing much can be said. Careful monitoring of foeto-placental functions by oestriol estimation, adequate rest, good nutrition, timely intervention of pregnancy, modern techniques to monitor foetus state during labour by cardiotocography etc. may significantly decrease the perinatal deaths

due to placental insufficiency of unknown origin.

Needless to emphasize that there has to be mass motivation to lay stress over attending the antenatal clinics early in pregnancy and regularly. To identify high-risk mothers at the earliest so that more attention could be paid to them. Preventive and remedial measures can be taken and a planned obstetrics and paediatric management given to them. To achieve this goal, a project in collaboration with department of paediatrics is in progress in Safdarjung Hospital. Under this project, mothers at high-risk are identified according to a scoring index. Patient has to be reviewed regularly to add any other problem which is kept under consideration. This simple scoring index can be filled up by the staff nurse, social worker or even the trainee. Such a scoring index is also done at rural centre and all the mothers scoring 3 or more points are referred to the Safdarjung Hospital. As soon as such a patient reaches the receiving room, a doctor with a post-graduation qualification attends to the case, and a paediatrician is obliged to attend when the high-risk mother delivers. Babies at risk are transferred to special neonatal unit. We hope that by this planned project we will be able to substantially reduce the PNMR. Not only during antenatal period or labour, advice should also be given regularly to space the children.

Scoring Index Card

<i>Factor</i>	<i>Score</i>
1. <i>Maternal age</i>	
Less than 20 years/ more than 35 years	1
2. <i>Parity-primi or 4th @+</i>	1
3. <i>Previous caesarean section</i>	2
4. <i>Previous still birth or neonatal deaths</i>	2

5. Acute maternal disease— fever, dyspnoea, convulsions, diarrhoea	2
6. If patient does not know her LMP	2
7. Foetal presentation other than head	2
8. Antepartum haemorrhage	2
9. Maternal height less than 140 cms	1
10. Hb of mother less than 7 gms%	1
11. BP more than 140/90	1

Total score if equal to or more than 3 signifies high risk pregnancy.

Summary

The main factors accounting for this high rate of PNMR are: (1) lack of requisite antenatal care—since the hospital is a referral centre, over 40% of the patients had no antenatal care whatsoever. They came to this hospital only during active labour. (2) Socio-economic standard of the patients—majority of the patients were poor and belonged to economically weaker section of the society. Some of these were under-nourished, chronically ill or had frequent conceptions. (3) Lack of facilities for foetal monitoring, cardiotocography, osteriol estimation besides acute manpower deficit.

Overcrowded wards, added to the gravity of the situation.

The maximum number of perinatal deaths have been in mothers above 40 yrs of age, primipara or with para 4 and low socio-economic group patients. Perinatal death was indirectly proportional to the age of gestation and birth weight of the baby. Neither the birth weight alone nor the length of pregnancy by itself provide the adequate index because infants at 37 wks vary widely in their birth weight. To know the intrauterine growth it is essential to know the LMP.

Antepartum and intrapartum anoxia have been leading factors for antepartum anoxia. Various causes responsible are APH, toxæmia of pregnancy and anaemia. Other important causes include diabetes, multiple pregnancy, syphilis, incompatibility, post-maturity, rupture uteris etc. However, during labour APH, premature rupture of membranes, abnormal presentation, cord prolapse, cord compression, prolonged labour etc. are the factors responsible for intrapartum anoxia.

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