



## Original Research Article

## A study of perinatal morbidity and mortality in preterm delivery

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## ABSTRACT

**Background:** To determine the incidence of preterm labour and also to determine the incidence and various cause of Morbidity and Mortality in the perinatal period.

**Materials and Methods:** A prospective study of patients in preterm labour (delivered > 28 weeks and prior to 37 completed weeks) admitted to the obstetrics department of JSS Hospital Mysore Karnataka. Which is tertiary teaching hospital. The study was conducted between February 2012 to January 2014. Total number of deliveries during the period were 3209 out of which the number of preterm deliveries were 241 which fulfilled our study criteria. Immediately. Following delivery, the following features of baby noted like Sex, weight, APGAR score at 1 and 5-minute, immediate complications, congenital Anomaly, birth injury, gestational age, as assessed by the paediatrician based on modified Ballard scoring. Babies and mother followed up for a period of 7 days. Baby examined for the detection of any complication which were managed accordingly.

During the study the various risk factors associated with preterm labour were also determined in detail and the correlation of the risk factors to antenatal care, maternal age, parity, presentation and lie, mode of delivery, indication of caesarean sections was studied in detail. So, this study we studied the behavioural pattern of the mother and baby towards preterm labour in detail. The data collected as mentioned above were analysed using appropriate statistical methods.

**Results:** The total number of preterm deliveries were 241 out of the total number of 3269 deliveries in the period of 2 years of the study. Therefore, the incidence of preterm labour was 7.4%. Out of which the total number of preterm spontaneous labour cases were 180 (74.7%) and total number of elective preterm delivery were 61 (25.3%). The total number of mortalities during the perinatal period was 82 which accounts of perinatal mortality of 30%. Out of which the total number of stillbirths were 28 (34%) and total number of early neonatal deaths were 54 (66%).

**Conclusions:** To conclude it was seen that preterm labour was associated with high occurrence of perinatal morbidity and mortality. The main causes were found due to birth asphyxia, respiratory distress syndrome and septicaemia. Preterm labour was more common in primigravida with preterm premature rupture of membrane as triggering factors. Preterm babies were born with number of physiological handicaps and thus predisposed to a large number of pathological conditions which needs anticipation and prompt treatment. Thus, timely identification of the risk factors and prompt treatment would help to bring down the incidence of preterm labour and hence its perinatal mishap. And lastly improvement of health care services and good neonatal intensive care unit are the cornerstone in the management of preterm births.

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## 1. Introduction

WHO defines preterm as babies born alive before 37 weeks of pregnancy are completed.

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There are again subcategories of Extreme preterm, very preterm and moderate preterm birth.

Incidence of preterm labour is 5–10% of all pregnancies. Despite great deal of research and introduction of new diagnostic and therapeutic technology the rate of preterm birth has not changed over the past 40 years.

Currently it is one of the most challenging problem confronting the obstetrician and neonatologist as it takes a heavy toll of perinatal morbidity and mortality (contributing between 60–70% of all perinatal deaths in most data series).

The focus of this study is on the perinatal outcome in terms of morbidity and mortality of a preterm baby. It is an important health priority to estimate the risk of adverse perinatal events in preterm births.

The value of perinatal morbidity and mortality study is that it reflects the quality and quantity of health care services available to the mother and the new-born. It reflects the result of maternity care more clearly than the neonatal death rate. Reliable knowledge of neonatal morbidity and mortality is useful antenatally not only to provide women in preterm labour with prognostic guidance but also to guide obstetrician who may be considering elective delivery of a preterm baby.

## 2. Materials and Methods

A prospective study of patients in preterm labour (after 28 weeks prior to 37 completed weeks) admitted during February 2012 to January 2014 to the obstetrics department of JSS Hospital Mysore Karnataka.

Institutional ethics committee approval was taken before starting this study.

The overall preterm delivery rate was determined after consideration of all causes of spontaneous preterm labour and deliberate intervention to achieve elective preterm delivery.

Total number of patients in the study – who fulfilled criteria (Working Criteria).

Patients in spontaneous preterm labour and those patients in whom preterm delivery was electively achieved during gestational period from 28 to 37 weeks (Very preterm and moderate preterm babies according to WHO) included in the study.

### 2.1. Exclusion criteria

Patients who were subjected to tocolytic therapy to arrest labour have been excluded from the study and pregnancies before 28 and after 37 completed weeks gestational age were excluded from the study period.

Detailed history was taken including the age, booking, marital status, socioeconomic status, educational, employment status and parity and thorough obstetric examinations considering all the high-risk factors was carried out.

Investigations like Hemogram, urine, vaginal swab culture sensitivity, C reactive protein, LFT (liver function tests), Kidney function tests), Non-stress test) Ultrasound (for gestational age, liquor, congenital anomaly etc.).

APGAR scores and birth weights of the new born were noted at the time of birth and they were followed up throughout the hospital stay. Incidence and perinatal morbidity and mortality of preterm birth were calculated.

## 3. Results

There were total number of 3269 deliveries in the period of 2 years in the study.

The total number of preterm deliveries in the study was 241, the incidence rate of which was 7.4%.

Out of which there were 180 cases of spontaneous labour which accounted for 74.7% and 61 cases had elective preterm labour which accounts for 25.3%.

The Multif et al pregnancies were also included. There were 31 twin pregnancies. So, the total number of babies included in the study were 272.

Again, the total number of mortalities in the perinatal period were 82 which accounts for 30% out of which the total number of stillbirths were 28(34%) and early neonatal deaths were 54 (66%).

### 3.1. Distribution of various triggering factor

The incidence of preterm labour in our study was 7.4%.

Preterm premature rupture of membranes (17.8%) was the leading causative factor followed by twin pregnancy (17.2%).

In our study we observed maximum number of preterm labours occurred in booked cases than un-booked cases, and in age group of 26 to 30 years. Also, preterm labour occurred more in primigravida cases than the multi-gravida.

The total number of congenital malformations were seen in 18 babies resulting in incidence of 6.6%. Out of which maximum number of cases were of neural tube defect 6 (33.0%).

Among the total number of 272 preterm babies, maximum number of babies were delivered in gestational age from 31-34 weeks were 128 (47%) out of which majority of the babies 101(37.1%) weighed less than 1500gms the mean weight was 1943gms with standard deviation of 285.2gms.

### 3.2. Occurrence of perinatal morbidity

Maximum number of morbidity was observed 53 (63.84%) in babies born between 31 to 34 weeks of gestation mostly of which were un-booked cases 47 (56.6%).

**Table 1:** Shows the various triggering factors for spontaneous preterm labour and also the indications of elective preterm delivery

Triggering factors	Spontaneous		Elective	
	Number of cases	Percentage	Number of cases	Percentage
Preterm premature rupture of membranes	32	17.8	6	9.84
Twin pregnancy	31	17.2	-	-
Pre-eclampsia	20	11.11	19	31.14
Anaemia	15	8.33	-	-
Intra uterine growth retardation	-	-	3	4.91
Antepartum haemorrhage	7	3.9	1	1.60
Congenital anomaly of foetus	6	3.33	8	13.11
Intrauterine foetal demise	5	2.8	10	16.4
Uterine anomaly	4	2.22	-	-
Cervical incompetence	4	2.22	-	-
Cardiac disorders	4	2.22	-	-
Urinary tract infections	3	1.66	-	-
Malaria	2	1.11	-	-
Typhoid	1	0.55	-	-
Eclampsia	1	0.55	14	23.0
Idiopathic	45	25	-	-
Total	180	100	61	100

**Table 2:** Shows the distribution of various causes of perinatal morbidity

Morbidity	Number of cases	Percentage
Birth asphyxia	29	35
Respiratory distress syndrome	19	23
Septicaemia	16	19.3
Hypothermia	5	6
Hyperbilirubinemia	3	3.6
Apnoea	3	3.6
Hypocalcaemia	2	2.4
Dislocation of hip joint	2	2.4
Meconium aspiration syndrome	1	1.2
Umbilical sepsis	1	1.2
Intraventricular haemorrhage	1	1.2
Patent ductus arteriosus	1	1.2
Total	83	100

### 3.3. Occurrence of perinatal mortality

Total number of babies with mortality were 82 which accounted for incidence of perinatal mortality of 30% out of which the number of stillbirths were 28 (34%) and the deaths which occurred in the first 7 days of birth were 54(66%).

Here again Birth asphyxia accounted for maximum number of deaths. 14 cases (25.92%). Followed by respiratory distress syndrome accounted for 13 cases (24.07%).

**Table 3:** Shows the distribution of various causes of perinatal mortality in the first 7 days and it excludes the still births

Causes of death	No. of deaths	Percentage
Birth asphyxia	14	25.92
Respiratory distress syndrome	13	24.07
Septicaemia	11	20.37
Intra ventricular haemorrhage	6	11.11
Meconium aspiration syndrome	3	5.55
Congenital anomaly of foetus	3	5.55
Aspiration	2	3.71
Necrotising enterocolitis	1	1.85
Meningitis	1	1.85
Total	54	100

N = 272

The perinatal mortality was maximum observed 26 (48%) among babies delivered before 30 weeks of gestation and in babies weighing less than 1500 grams in un-booked cases Thus gestational age and baby birth weight are both inversely proportional to mortality.

## 4. Discussion

A hospital-based maternity review of preterm deliveries was an appropriate study design to determine the incidence and trend of preterm births and perinatal deaths. There were 3269 deliveries in the study period. The total number of patients in our study is 241. Thus, the incidence of preterm labour in our study was 7.4%.

The occurrence of spontaneous preterm labour in our study is 74.7% and of elective preterm labour is 25.3%. Idiopathic preterm labour accounts for 45% of cases in our study.

In our study preterm labour was more in primigravida of middle socioeconomic status and was highest in patients belonging to the age group of 20-25 years (58.1%).

The incidence in developed countries ranges from 3.5 to 7%. Which is comparatively lower than the developing countries which may be due to various reasons like poor antenatal care, screening programmes, lack of health care services for pregnant mothers and also lack good Intensive neonatal care unit are the corner stone in the management of preterm births.

**Table 4:** Shows the compares the preterm labour rate with our study

Bhargav et al 1984	7 – 8
Kou-Huang Chen et al 2001 – 2011	8.2% to 9.1%
Chukwumeka Anthony Iyoke, et al 2009 – 2010	16.9
Xiaoqin Zhu, et al 2015 at Huai	4.06
Stacy Beck et al 2005	9.6
Present study	7.4

Study done by Neetu Gupta et al. in 2018 showed perinatal morbidity of 67.2% and perinatal mortality of 52.8%.

Singh et al. and Singh Uma et al. showed incidence of perinatal mortality around 21% and 12.7% respectively, which is quite less when compared with the present study (incidence of perinatal mortality in our study was 30%).

In comparison to the above studies our study had perinatal morbidity of 30.5% and perinatal mortality of 30%.

## 5. Conclusion

To conclude it was seen that preterm labour was associated with high occurrence of perinatal morbidity and mortality. The main cause of these were found to be birth asphyxia, respiratory distress syndrome, and septicaemia.

Preterm babies are born with a number of physiological handicaps and are thus predisposed to a large number of pathological conditions which needs anticipation and prompt treatment. Prevention of preterm labour is very essential to minimize a perinatal morbidity and mortality. Thus, timely identification of the risk factors and prompt treatment would help to bring down the incidence of preterm labour and hence its perinatal mishap.

And lastly but not the least improvement of health care services and a good intensive neonatal care unit are the corner stone in the management of preterm births.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

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