

## Assessment of Risk Factors & Fetal Outcome in Preterm Labour in A Tertiary Care Hospital on the West Cost of India

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### Abstract

*Background:* Preterm births are the major cause of perinatal and neonatal morbidity and it represents one of the principal targets for obstetric health care. Aim of this study is to identify etiological factors and to assess the outcome with preterm labor and delivery. *Methods:* This study is conducted in the department of obstetrics and gynaecology of a tertiary care center during the period of 3 years between 1st January 2015 to 31<sup>st</sup> December 2017. Patients presenting between 28 and 37 completed weeks with preterm labour were included in this study. Patients were subjected to detailed history with respect to age, parity, previous pregnancy outcome and to identify the presence of any risk factor in this pregnancy. A through obstetrics and systemic examination was done. *Results:* Incidence of preterm labour is found to be 23.06%. Highest incidence was found between the age group of 20 to 29 year (69%). The study shows that 31% patients had history of previous one abortion, 5% had previous two abortions, 2% had previous three abortion and 14% had previous one PTVD. This shows that total 38% patients were having history of previous abortions. Highest number of preterm labour were late preterm that is after 34 weeks but before 37 completed weeks constituting about 64.34%. Most common risk factor was found to be PPRM constituting 29%. 2nd

most common being Preeclampsia/Eclampsia accounting for 26%, UTI in 10% followed by APH in 8%. Study shows that 73% of women had vaginal delivery, 27% of women underwent cesarean section. Our study shows that 6.55% babies have birth weight <1000gm, 25.23% were having weight between 1000-1500gm, 37.38% had weight between 1500-2000gm and 30.84% had birth weight more than 2000gms. Our study shows that 78 (72.89%) neonates required neonatal intensive care unit (NICU) admission and the most common neonatal complications noted were jaundice in 34 (31.77%) neonates, followed by asphyxia 21 (19.62%) and RDS seen in 12 (11.21%) neonates. *Conclusion:* Various risk factors that lead to preterm labor are identifiable. The recognition of risk factors for preterm labour constitutes a part of basic prenatal care. Most etiological factors are modifiable and preconception counselling should emphasize and address these issues.

**Keywords:** Preterm Labour; Etiology; Risk Factor.

### Introduction

Preterm labor is a very challenging obstetric complication encountered by obstetricians, as are preterm neonates for the pediatricians. Preterm labor is defined as the onset of labor after the period of period. Due to continued innovation in neonatal intensive care facilities and obstetric interventions, fetal survival is now possible even at 20 weeks gestation in developed countries. However, even in the best setups in developing countries, salvage is rare below 28 week. The American Academy of Paediatrics and the American College of

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Obstetrics and Gynaecology (1997) proposed the following criteria to diagnose preterm labour [1].

1. Contractions of 4 in 20 minutes or 8 in 60 minutes plus progressive cervical change
2. Cervical dilatation greater than 1 cm
3. Cervical effacement of 80% or greater

Incidence of Preterm delivery is one in 10 births (11%) in USA [1] and even greater births in developing countries and causes 40-75% neonatal deaths. Estimates of preterm birth rates range from 5-10% in developed countries to 25% in developing countries [11]. The worldwide incidence of premature birth ranges between 6 and 11% [3]. In India, Incidence of preterm labor is 23.3% and of preterm delivery 10-69%. Incidence of preterm is increasing worldwide because of increased frequency of multiple births due to assisted reproductive techniques (ART), more working mothers, increasing age at marriage, increasing psychological stress and medically induced pre maturity. Hence, it is a time felt need to ascertain the causes and outcome of preterm labor and delivery.

### Materials and Methods

It was a prospective hospital based study on all patients with preterm labor (before 37 completed weeks) over a period of 3 years between 1<sup>st</sup> January 2015 to 31<sup>st</sup> December 2017 at the Department of Obstetrics and Gynaecology, Guru Gobind Singh Hospital, Jamnagar. In this study analysis of the cases in relation to different risk factors was done.

### Inclusion Criteria

Pregnant women who are admitted with signs and symptoms of preterm labour.

Indicated preterm labour for obstetric and medical disorders.

### Exclusion Criteria

Pregnancy before 28 weeks and pregnancy after 37 complete weeks.

Pregnant women with major foetal congenital anomalies incompatible with life detected by USG. Intrauterine foetal demise.

### Observation and Results

Maximum number of cases of preterm labour in our study was in the age group of 25-29 year (36%) This was followed by 33% in the age group 20-24 years. Thus, it may be noted that 69% cases were in the age group of 20-29 years.

In our study it was observed that 93% patient were having weight less than 55kg. Highest number of preterm labour were late preterm that is after 34 weeks but before completion of 37 weeks constituting about 64.34%.

In our study there were 42% Primigravida and 58% multiparous. Among the 58% multiparous presenting in preterm labour, 87(50%) were gravid two, 63 (36.20%) were gravida three, 18 (10.35%) were gravida four and there were two cases (3.45%) of grand multipara.

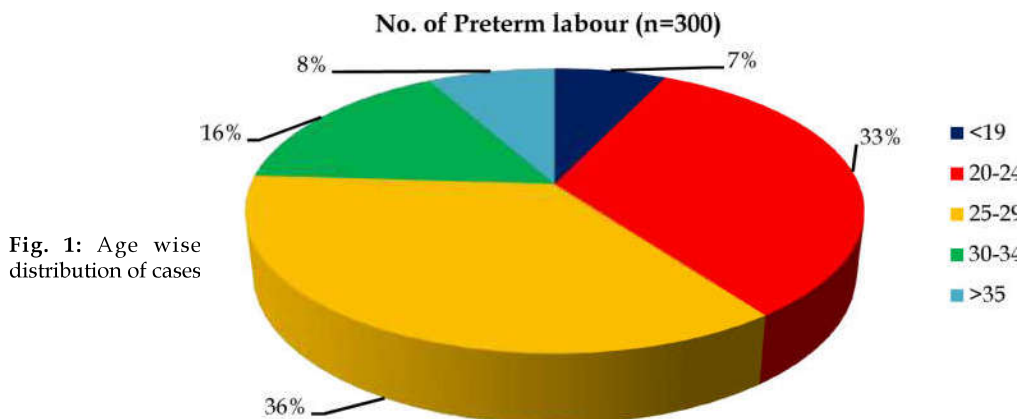


Fig. 1: Age wise distribution of cases

Table 1: Distribution of cases according to maternal weight

Maternal weight in kg	No. of Cases (n=300)	Percentage
<45kg	57	19%
45-55kg	222	74%
>55kg	21	07%
Total	300	100%

**Table 2:** Distribution according to Gestational Age

Gestational Age (in weeks)	No. of Preterm Labour(n=300)	Percentage in present study
28 to 34	107	35.66%
34 to 36	155	51.67%
>36	38	12.67%
Total	300	100%

**Table 3:** Distribution of cases as per Gravidity

Gravida	Number (N=174)	Percentage
G2	87	50%
G3	63	36.2%
G4	18	10.35%
G5 and above	06	3.45%
Total	174	100%

**Table 4:** Distribution of cases according to past obstetric history

Past obst. history	No. of cases (n=300)	Percentage of present study
One abortion	93	31%
Two abortion	15	5%
Three abortion	06	2%
One PTVD	42	14%

**Table 5:** High risk factors for preterm labour

Risk factors	No. of cases	Percentage in present study
Active phase of labour	195	65%
Urinary tract infection	30	10%
PPROM	87	29%
Preeclampsia/ eclampsia	78	26%
Periodontal diseases	36	12%
Antepartum hamorrhage	24	8%
Multiple pregnancy	18	6%
Polyhydramnios AFI>25cm	12	4%
Chorioamnionitis	15	5%
GDM	6	2%
Uterine anomaly	3	1%

**Table 6:** Mode of Delivery

Mode of delivery	No. of Cases (n=300)	Percentage
Vaginal	219	73%
LSCS	81	27%

The study shows that 31% patients had history of previous one abortion, 5% were having previous two abortions, 2% had past history of previous three abortion and 14% had previous one PTVD. This shows that total 38% patients were having history of previous abortions.

\*The total No. of cases however, does not sum up to 100 as there were cases with multiple risk factors in the same patient. The study shows that 65% patients were present in active phase of labor.

Prematur rupture of membranes was found to be the most common cause of preterm labor that is 29%.

2<sup>nd</sup> most common being Preeclampsia/Eclampsia in 26%, UTI found in 10% and APH in 8%.

In our study rate of vaginal delivery was 73% and rate of LSCS was 27%.

Our study shows that 21 (6.55%) babies have birth weight <1000gm, 81 (25.23%) were having weight between 1000-1500gm, 120 (37.38%) had weight between 1500-2000gm and 99 (30.84%) had birth weight more than 2000gms.

The study shows that 234 (72.89%) neonates required neonatal intensive care unit (NICU) admission and the most common neonatal complications noted were jaundice in 102 (31.77%) neonates, followed by asphyxia 63 (19.62%) and RDS seen in 36 (11.21%) neonates. Hypoglycemia was found in 9 (2.80%) neonates, septicemia was present

Table 7: Distribution of cases according to Birth weight

Weight in GMS	No. of cases (n=321)	Percentage
<1000	21	6.55%
1000-1500	81	25.23%
1500-2000	120	37.38%
>2000	99	30.84%

\*Out of 100 case 15 were twin and 3 were having triplet pregnancy n=321.

Table 8: Incidence of Morbidity of premature infants

Morbidity	Case Study	Percentage
NICU admission	234	72.89%
Neonatal Mortality	39	12.14%
Jaundice	102	31.77%
Asphyxia	63	19.62%
RDS	36	11.21%
Hypoglycemia	9	2.80%
Septicemia	15	4.67%
Hypothermia	9	2.80%
Necrotizing Enterocolitis	3	0.93%

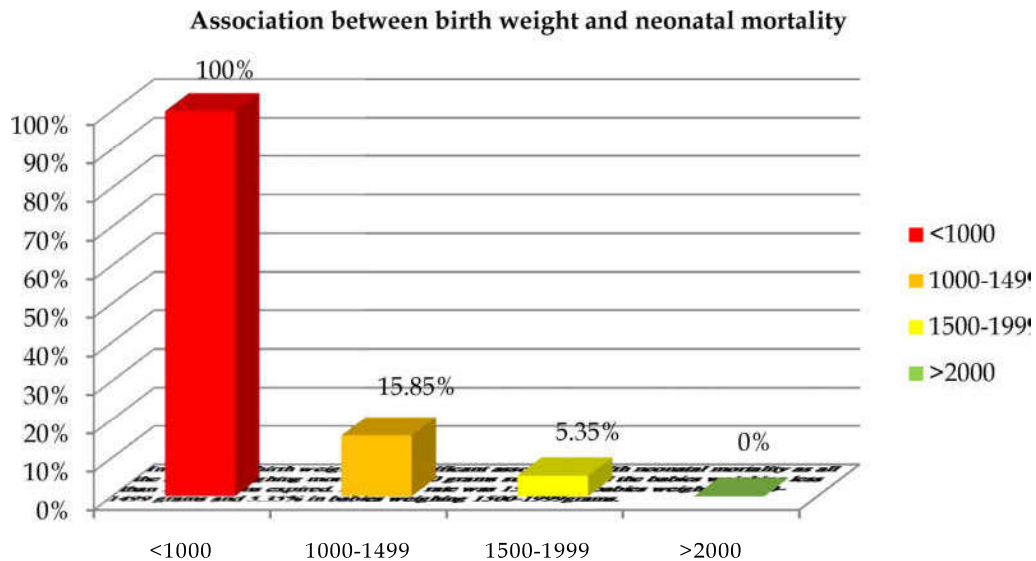


Fig. 2: Association between birth weight and neonatal mortality

in 15 (4.67%) neonates, incidence of hypothermia was 2.80% and NEC found in 3 (0.93%) neonate.

In our study birth weight had significant association with neonatal mortality as all the babies weighing more than 2000 grams survived and the babies weighing less than 1000 grams expired. Mortality rate was 15.85% in babies weighing 1000-1499 grams and 5.35% in babies weighing 1500-1999grams.

**Discussion**

In our study out of all the deliveries over 3 year period Preterm deliveries accounts for 23.08%. In our study among the 58% multiparous presenting in

preterm labour, 87 (50%) were gravid two, 63 (36.20%) were gravida three, 18 (10.35%) were gravida four and there were 6 cases (3.42%) of grand multipara. In a similar study by Fernandes at el among the multiparous presenting in preterm labour, 50.02% were gravida 2, 37.67% were gravida 3, 20 8.7% were gravida 4 and there were 3 cases of grand multipara [2]. Our study shows that 31% patients had history of previous one abortion, 5% were having previous two abortions, 2% had past history of previous three abortion and 14% had previous one PTVD. This shows that total 38% patients were having history of previous abortions. In a study by Cooper et al, it was observed that multiparous patients who were pregnant for the second time,

26.72% has a prior history of 1 abortion and 10 patients had a history of preterm labour in previous pregnancy [3].

Highest number of preterm labor were late preterms that is after 34 weeks but before completion of 37 week constituting about 64.34%. The present study is comparable to study done by Singh uma et al [4] where maximum no of patients (48.60%) were in gestational age group of 34-36 weeks. Another study reported that, compared with births <34 weeks, late preterm births are more likely to be the result of spontaneous idiopathic preterm labor or PPRM than medical or pregnancy indications [5].

In our study most common factor was found to be PPRM constituting 29%. 2nd most common being Preeclampsia/eclampsia accounting for 26%, followed by UTI in 10% and APH in 8%. The ACOG Clinical management guidelines for obstetrician gynecologist for the management of preterm labor estimates that the relative distribution of etiologies of preterm birth < 34 weeks gestation is 30% indicated, 30% PPRM, and 40% spontaneous preterm labor whereas, for late preterm births, the relative distribution of etiologies changes to 20% indicated, 25% PPRM, and 55% spontaneous preterm labor [6].

15-20% of all cases of preterm birth are due to elective delivery for a maternal or a fetal complication where it is judged that the fetus is better delivered in the mother's interest or that of its own [7]. The remaining 60-70% of preterm births are likely due to sub-clinical infective/ inflammatory processes, cervical dysfunction, multiple gestations, idiopathic and possible social, nutritional, and environmental interactions [8].

In our study 73% of women had vaginal delivery 23% of women underwent cesarean section. In a study similar findings were found of the 101 women who had spontaneous labour, 67 (66.34%) had vaginal delivery and emergency LSCS was noted among 34 (33.66%) [9].

Our study shows that 21 (6.55%) babies have birth weight <1000gm, 81 (25.23%) were having weight between 1000-1500gm, 120 (37.38%) had weight between 1500-2000gm and 99 (30.84%) had birth weight more than 2000gms. Our study shows that 234 (72.89%) neonates required neonatal intensive care unit(NICU) admission and the most common neonatal complications noted were jaundice in 102 (31.77%) neonates, followed by asphyxia 63 (19.62%) and RDS seen in 36 (11.21%) neonates. This is comparable with the study by Garg S et al [10] showing jaundice in 30% neonates, asphyxia in 18% and RDS in 16% neonates.

In our study birth weight had significant association with neonatal mortality as all the babies weighing more than 2000 grams survived and the babies weighing less than 1000 grams expired. Mortality rate was 15.85% in babies weighing 1000-1499grams and 5.35% in babies weighing 1500-1999grams.

## Conclusion

Hence it can be concluded that various risk factors that lead to preterm labor are identifiable. Preterm infants suffer from many complications and have high mortality. Early identification of risk factors and early interventions in the form of treating the underlying risk factor, employing tocolysis, antenatal steroid prophylaxis and shifting mother to a tertiary care center with advanced neonatology unit can improve the neonatal survival and decrease morbidity and mortality due to prematurity. Preterm labor and preterm births require early and prolonged hospitalization posing great financial and psychological burden on family. Most etiological factors are modifiable, and preconception counselling should emphasize family planning, good nutrition, safe sex, good hygiene and sexually transmitted diseases. As Most etiological factors are modifiable and preconception counselling should emphasize and address these issues.

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