



**ORIGINAL RESEARCH PAPER**

**Gynecology**

**REVIEW OF EPIDEMIOLOGICAL FACTORS OF PRETERM DELIVERIES: STUDY OF 505 CASES**

**KEY WORDS:** Preterm Labour, Epidemiological Factor, Neonatal Outcome

**Dr Amit Sharad Naik**

Assistant Professor , S.M.B.T. IMS & RC DHAMANGAON

**Dr Saudamini Amit Naik\***

Assistant Professor , S.M.B.T. IMS & RC DHAMANGAON \*Corresponding Author

**ABSTRACT**

Preterm birth has been a significant cause of perinatal mortality and morbidity for centuries, Preterm birth is a major problem responsible for difference in infant mortality & morbidity in developing & developed countries This retrospective study was carried out in the Dept of Obstetrics & Gynecology of a rural medical college between Jan 2015 & Dec 2016, to Review the Epidemiological factors of preterm labour & to Evaluate neonatal outcome of preterm deliveries in rural area. All mother who delivered between 21 to <37 weeks from LMP was taken as criteria & studied. Detailed obstetric history about any past preterm labour, spontaneous or induced abortion, and other epidemiological factors were noted. Total 505 preterm labours were studied amongst 6340 deliveries during the study period.

**RESULTS:-** maximum preterm deliveries were noted amongst unregistered primigravidas, most of them were spontaneous in onset. Maximum cases belonged to lower socio – economic group and were illiterate. Neonatal survival rate was maximum for gestational age 35 – 37 weeks & weight 1.5 to 2.5gm. survival rate was found better in the group in whom delivery was prolonged with tocolysis & steroid was given.

**CONCLUSION:-** Epidemiological factors, socioeconomic status, maternal education and previous preterm delivery can be important predictors of predisposition for preterm labour. An obstetrician who first comes in contact with the antenatal patient needs to consider these points for counseling and differentiating high risk patients with regard to preterm labour.

Preterm birth has been a significant cause of perinatal mortality and morbidity for centuries and hence deserves attention. Despite our knowledge of factors that predispose patients to enter preterm labour the fact remains that the onset of preterm labour is not understood sufficiently. Preterm birth is a major problem responsible for difference in infant mortality & morbidity in developing & developed countries. Infants are born preterm at less than 37 weeks' gestational age after: (1) spontaneous labour with intact membranes, (2) preterm premature rupture of the membranes (PPROM), and (3) labour induction or caesarean delivery for maternal or fetal indications. The frequency of preterm births is about 12–13% in the USA and 5–9% in many other developed countries<sup>1</sup>. Preterm birth is stratified into mild preterm (32–36weeks), very preterm (28–31 weeks) and extremely preterm (<28 weeks) with increasing neonatal mortality and morbidity. Recent studies suggested that infection was mostly responsible for extreme preterm birth, while stress and lifestyle accounted for mild preterm birth, and a mixture of both conditions contributed to very preterm birth<sup>2</sup>.The obstetrician faces the challenge of effecting delivery in such a way as to optimize the status of the fetus at birth assuming that intensive care will be applied. The neonatologist in turn must make a judgment as how best to dispense the finite resources for medical care. The preterm labour is an extremely important public health & clinical problem.

**STUDY SITE :-** DEPARTMENT OF OBSTETRICS & GYNACOLOGY S.M.B.T Institute and medical sciences, Dhamangaon, Nasik. This retrospective study has been undertaken in Dept. of Obst. & Gynac of a rural medical college between Jan 2015 & Dec 2016.

**Aims & Objectives:-**

- (1) Review of Epidemiological factor of preterm labour.
- (2) Evaluation of neonatal outcome of preterm deliveries.

**Materials & Methods:-**

- All mother who delivered between 21 to <37 completed weeks from LMP was taken as criteria & studied. Detailed obstetric history about any past preterm labour, spontaneous or induced abortion was noted.
- Socioeconomic status was judged by income per annum. Accordingly they were grouped as upper, middle & lower socioeconomic class.
- Nutritional status of patients was judged by recording height, weight & built of patient.
- General examination including pulse, BP, presence of pallor &

edema as well systemic examination findings were noted.

- Lab evaluation of patients done to rule out any medical problem.

**OBSERVATIONS AND RESULTS :-**

(1) INCIDENCE OF PRETERM DELIVERIES.

| TOTAL NUMBER OF DELIVERIES | TOTAL PRETERM DELIVERS | INCIDENCE |
|----------------------------|------------------------|-----------|
| 6340                       | 505                    | 7.97%     |

Total no. of deliveries was 6304. Total preterm deliveries (PTD) were 505. Incidence<sup>1,2</sup> of preterm deliveries was 7.97%.

(2) ANALYSIS OF PRE TERM DELIVERY AS PER TYPE OF DELIVERY.

| TYPE OF DELIVERY | NO. OF CASES | INCIDENCE |
|------------------|--------------|-----------|
| SPONTANEOUS      | 397          | 78.61%    |
| INDUCED          | 108          | 21.38%    |

Out of 505 PTD 78.61% delivered spontaneously remaining few were induced either for maternal or fetal indication. The commonest indication for induction of labour was premature rupture of membranes.

(3) ANALYSIS ACCORDING TO ANC REGISTRATION.

| GROUPS OF PTS              | NO. OF CASES | INCIDENCE |
|----------------------------|--------------|-----------|
| 1. REGISTERED              |              |           |
| (a) 3 OR more ANC visits   | 236          | 46 .72%   |
| (b) Less than 3 ANC visits | 165          | 32 .67%   |
| 2. UNREGISTERED            | 104          | 20 .59%   |

Out of total preterm deliveries 53.27% had less than 3 ANC visits or were unregistered

(4) ANALYSIS ACCORDING TO PARITY.

| PARITY        | NO. OF PTD | PERCENTAGE |
|---------------|------------|------------|
| PRIMI         | 194        | 38.4%      |
| SECOND        | 156        | 30.9%      |
| THIRD         | 113        | 22.4%      |
| FOURTH        | 28         | 5.6%       |
| FIFTH & ABOVE | 14         | 2.8%       |

Highest distribution of cases was seen in primigravida. second child is less prone to preterm birth than first. Accordingly as the birth order increases the chance of preterm birth decreases<sup>3</sup>.

(5) BIRTH SPACING IN PRETERM DELIVERY CASES.

| SR. NO | BIRTH INTERVAL IN YRS | NO. OF Preterm deliveries | PERCENTAGE |
|--------|-----------------------|---------------------------|------------|
| 1.     | ONE                   | 104                       | 20.56%     |
| 2.     | TWO                   | 85                        | 16.82%     |
| 3.     | THREE                 | 47                        | 9.34%      |
| 4.     | FOUR                  | 28                        | 5.60%      |
| 5.     | FIVE YEARS ABOVE      | 47                        | 9.34%      |

As the birth interval decreases there is increase in the incidence of preterm deliveries, highest in 1 year followed by 2 year interval following a preterm birth.

(6) ANALYSIS OF CASES OF ACCORDING TO SOCIO – ECONOMIC STATUS.

| SR.NO | SOCIO – ECONOMIC STATUS | INCOME PER ANNUM | NO. OF PTD | PERCENTAGE |
|-------|-------------------------|------------------|------------|------------|
| 1.    | UPPER                   | >60,000          | 146        | 28.97%     |
| 2.    | MIDDLE                  | 20,000 – 60,000  | 52         | 10.27%     |
| 3.    | LOWER                   | <20,000          | 307        | 60.74%     |

60.74% of cases belonged to lower socio – economic group. Preterm birth was more common in lower socioeconomic strata<sup>4</sup>.

(7) ANALYSIS AS PER THE EDUCATION OF MOTHERS.

| EDUCATIONAL STATUS          | NO. OF PTD CASES | PERCENTAGE |
|-----------------------------|------------------|------------|
| 1. ILLITERATE               | 288              | 57%        |
| 2. PRIMARY                  | 109              | 21.49%     |
| 3. SECONDARY                | 99               | 19.62%     |
| 4. HIGHER SECONDARY & ABOVE | 09               | 1.896%     |

57% of mothers are illiterate. Risk of preterm birth decreases as the level of literacy increases<sup>3,4</sup>.

(8) ANALYSIS OF PRETERM DELIVERIES ACCORDING TO MATERNAL HEIGHT.

| HEIGHT OF MOTHERS (CM) | NO. OF PTD | PERCENTAGE |
|------------------------|------------|------------|
| LESS THAN 140          | 09         | 1.86%      |
| 140 – 145              | 113        | 22.42%     |
| 145.1 – 150            | 208        | 41.12%     |
| 150.1 – 155            | 118        | 23.36%     |
| 155.1 – 160            | 43         | 8.41%      |
| 160.1 & ABOVE          | 14         | 2.80%      |

This table shows high incidence of preterm deliveries in cases where maternal height <150cm which is comparable with ZhenHan<sup>5</sup> in his study. In our study shortest mother was of 138cm & tallest was 166cm.

(9) ANALYSIS OF PRETERM DELIVERIES ACCORDING TO MATERNAL AGE.

| MATERNAL AGE (YEARS) | NO. OF DELIVERIES | PERCENTAGE |
|----------------------|-------------------|------------|
| 18- 19               | 28                | 5.54%      |
| 20 – 24              | 236               | 46.72%     |
| 25 – 29              | 179               | 35.44%     |
| 30 - 34              | 57                | 11.28%     |
| >35                  | 05                | 0.99%      |

Maximum preterm deliveries were in age group 20 – 24 years. Maximum number of preterm deliveries were observed in the maternal age group 20-24 yrs<sup>3,6</sup>.

(10) ANALYSIS OF PRETERM DELIVERS ACCORDING TO MATERNAL WEIGHT.

| SR.N O | MATERNAL WEIGHT | NO. OF PTD CASES | PERCENTAGE |
|--------|-----------------|------------------|------------|
| 1.     | BELOW 45        | 132              | 26.16%     |
| 2.     | 45 – 50         | 184              | 36.44%     |
| 3.     | 50.1 – 55       | 109              | 21.49%     |
| 4.     | 55.1 & ABOVE    | 80               | 15.88%     |

This table shows high incidence of preterm delivery in mothers weighing below 50kg<sup>7</sup>.

(11) ANALYSIS OF PRETERM DELIVERIES CASES AS PER HEMOGLOBIN LEVELS.

| SR.N O | GRADE OF ANAEMIA                | NO. OF CASES | PERCENTAGE |
|--------|---------------------------------|--------------|------------|
| 1.     | SEVERE ANAEMIA (LESS THAN 6.5%) | 09           | 1.86%      |
| 2.     | MODERATE ANAEMIA (6.5% - 8.09%) | 57           | 11.21%     |
| 3.     | MILD ANAEMIA (8.1% - 10.09%)    | 208          | 41.12%     |
| 4.     | NORMAL (>10.9%)                 | 231          | 45.79%     |

54.20% mother who delivered preterm were anemic<sup>8</sup>.

(12) ANALYSIS OF PRETERM DELIVERIES CASES ACCORDING TO PAST OBSTETRIC PERFORMANCE.

| SR.N O | TYPE OF BAD OBSTERIC PERFORMANCE | NO. OF CASES | PERCENTAGE |
|--------|----------------------------------|--------------|------------|
| 1.     | ONE PRETERM DELIVERY             | 61           | 12.14%     |
| 2.     | TWO OR MORE PTD                  | 14           | 2.80%      |
| 3.     | SPON/ INDUCED ABORTION           | 104          | 20.50%     |
| 4.     | PTD & ABORTION                   | 24           | 4.67%      |

TOTAL 40.18%. Patients had previous history of preterm delivery or abortion

(13) ANALYSIS OF PRETERM DELIVERIES ACCORDING TO TYPE OF DELIVERY.

| SR.NO | TYPE OF DELIVRY            | NO. OF CASES | PERCENTAGE |
|-------|----------------------------|--------------|------------|
| 1.    | VAGINAL DELIVERY BY VERTEX | 415          | 82.17%     |
| 2.    | VAGINAL BY BREECH          | 38           | 7.52%      |
| 3.    | LSCS                       | 52           | 10.28%     |

82.17% delivered by vertex vaginal. 7.52% by breech vaginal. 10.28% were LSCS deliveries.

(14) NEONATAL SURVIVAL ACCORDING TO GESTATIONAL AGE & BIRTH WEIGHT.

| GEST AGE (WKS)     | Total | WEIGHT AT DELIVERY |                |                 |
|--------------------|-------|--------------------|----------------|-----------------|
|                    |       | <1000gm            | 1000 – 1500gm  | 1500 – 2500gm   |
| 21 – 28 week       | 114   | 16.66% (10/60)     | 57.14% (24/42) | 66.66% (8/12)   |
| 28.1 – 35 week     | 252   | 31.42% (22/70)     | 66.6% (96/114) | 82.35% (56/68)  |
| 35.1wk – 37.0 week | 139   | 80.00% (4/5)       | 77.14% (27/35) | 92.92% ( 92/99) |

Survival rates as per gestational age & birth weight was studied & was found to maximum i.e. 92.92% for gestational age 35 – 37

weeks & weight 1.5 to 2.5gm<sup>9,10</sup>.

(16)Tocolysis was given to 69 patients who had warning sign of preterm labour, without advanced cervical changes .inj. Dexamethasone was given to all patients. 24 out of 69 patients (34.7%) delivered within 24 hours of starting tocolytic drugs & 45 delivered after 24 hours to 19 days (65.21%) survival rate was found better in the group in whom delivery was prolonged with tocolysis & steroid was given.

**DISCUSSION:**

Philip steer in his article on preterm birth states, The Homo sapiens neonate is born much more immature than other anthropoid species, perhaps because earlier birth has evolved to avoid the large head of the human fetus becoming impacted in the small pelvis of the mother, who has become adapted to a bipedal gait<sup>11</sup>. The main burden of preterm birth exists in developing countries. There are no accurate recent worldwide data, but estimates of preterm birth rates range from 5% in developed countries to 25% in developing countries<sup>11</sup>. In Our Study the incidence<sup>1,2</sup> of preterm labour was 7.97% .in our study 78% preterm labour were spontaneous and 53% were in patients with less than 3 ANC visits. P. Astolfi in his paper states as the birth order increases the chance of preterm birth decreases<sup>3</sup>, similar findings were noted in our study. One important observation in our study was the chance of having a repeat preterm delivery decreases drastically if the next pregnancy is spaced after 2 years. As in other studies Preterm birth was more common in lower socioeconomic strata<sup>4</sup> and lower literacy levels,<sup>3,4</sup> in our study also. ZenHan<sup>5</sup> et al states , From our complete systematic review and metaanalyses, , we conclude that short-statured women have higher unadjusted risks of Preterm Births and Low Birth Weight and tall women have approximately one half the unadjusted risk compared to women of reference height. In our study Maximum number of preterm deliveries were observed in the maternal age group 20-24 yrs<sup>3,6</sup> which is comparable to other studies. Risks of very preterm birth increased with maternal age, irrespective of parity. F. Sharifzadeh<sup>7</sup> in his study stated, Preterm delivery showed a negative correlation with maternal BMI (r = -0.124, p = 0.004) and the women with a lower BMI had a greater number of preterm deliveries (p = 0.035) similarly in our study we had more preterm deliveries in mothers less than 50kg. Anaemia is the most common nutritional deficiency in pregnancy and it is strongly associated with preterm delivery<sup>8</sup>, in our study we had 54% women with anaemia delivering preterm. Previous studies provide evidence that preterm and small for gestational babies may be associated with increased risks of neonatal mortality, ROP, and BPD in VLBW infants<sup>9,10</sup>, similarly in our study larger babies and more gestational age at birth was associated with better survival rates.in our study neonatal survival rate was found better in the group in where delivery was prolonged with tocolysis & steroid was given

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