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Maternal and Fetal Outcome in Preterm Delivery in Tertiary Care Centre

Dr. Lavanya.J[1], Dr. Sarmishta[2], Prof Dr. Dhanalakshmi.M.G[3]
[1](Post Graduate, Department of Obstetrics and Gynecology, Sri Ramachandra Institute Of Higher Education And Research, SRMC & RI/ SRIHER, Chennai, India)
[2] (Assistant Professor, Department of Obstetrics and Gynecology, Sri Ramachandra Institute Of Higher Education And Research, SRMC & RI/ SRIHER, Chennai, India)
[3] (Professor, Department of Obstetrics and Gynecology, Sri Ramachandra Institute Of Higher Education And Research, SRMC & RI/ SRIHER, Chennai, India)

Abstract:
Background: *To study the maternal and fetal outcome in preterm delivery in tertiary care centre.*
Materials and Methods: *This Prospective Observational study included mothers who were admitted in preterm labour with intact membrane and had a preterm delivery in the Department of Obstetrics and Gynecology, Sri Ramachandra Institute Of Higher Education And Research, Chennai, Tamil Nadu, India. 178 cases were enrolled during the study period from December 2019 to November 2020. Detailed history taking, general, systemic and obstetrical examination were done paying special attention to presence or absence of conventional risk factors for preterm labor. All women with preterm labor were investigated for presence of infection by complete hemogram, CRP, urine culture and vaginal swab culture. Women in active phase of labor (>4cm dilatation), with signs and symptoms of chorioamnionitis, antepartum hemorrhage and those with any medical contraindication to tocolytics were not given tocolysis. The patients with preterm premature rupture of membrane and abruption were excluded from the study.*
Results: *In our study, majority of patients 79 (44.38%) were in age group of 21-30 years. Among 178 patients, 64.61% were delivered at the Gestational age of 34 weeks to < 37 weeks. There were 69 (38.76%) primigravidas and 109 (61.24%) multigravidas. In our study, about 24 (13.48%) patients had history of previous preterm delivery. Diabetes Mellitus is the most common risk factor for preterm delivery found in 51 (28.65%) patients followed by Hypertension in 34 (19.10%) patients and UTI was found in 28 (15.73%) patients. 98(55.06%) patients were given two doses of antenatal corticosteroids and 26 (26.5%) babies born to these patients had Respiratory distress syndrome. Out of 178 patients, 122 (68.5%) were delivered by Cesarean section and 56 (31.5%) were delivered by Normal vaginal delivery. Out of 202 babies delivered, 155 (77%) babies had Low birth weight (birth weight <2.5kg). In our study, 58 (28.71%) babies had Neonatal Hyperbilirubinemia and 44 (21.78%) had Respiratory Distress Syndrome. Our hospital has an overall neonatal mortality rate of 3.4% which indicates good neonatal care.*
Conclusion: *A baby born prematurely can cause huge emotional and psychological impact on mother and great financial burden on family. Clinical suspicion, early detection and correction of risk factors, institutional delivery and good neonatal care back up facilities can improve the outcome of preterm delivery.*
Key words: *Maternal outcome, Preterm delivery*

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I. Introduction

Preterm labor is defined as onset of uterine contractions and cervical changes following the period of viability and before 37 weeks of gestation. WHO defines preterm birth as babies born before 37 weeks of pregnancy is completed. Preterm birth is the leading cause of death worldwide for children below 5 years of age. Many preterm babies survive in high-income countries but in low- and middle-income countries, a lack of adequate newborn care puts the lives of many preterm babies at risk[1]. The etiology of preterm labor may be multi-factorial. The earlier the onset of labor, the more likely is that a pathological process is implicated[2]. Premature babies are at risk of many immediate and long term complications. Immediate (short term) neonatal morbidity includes respiratory distress syndrome, hypothermia, hypoglycemia, jaundice, intraventricular hemorrhage, necrotizing enterocolitis, bronchopulmonary dysplasia, sepsis and patent ductus arteriosus. Long term morbidity includes cerebral palsy, mental retardation and retinopathy of prematurity. Residual mental and motor handicaps are the major deterrents to the optimal development of preterm infant[2].

II. Materials and methods

This Prospective Observational study included mothers who were admitted in preterm labour with intact membrane and had a preterm delivery in the Department of Obstetrics and Gynecology, Sri Ramachandra Institute Of Higher Education And Research, Chennai, Tamil Nadu, India. 178 cases were enrolled during the study period from December 2019 to November 2020.

Study Design: Prospective observational study

Study Location: Department of Obstetrics and Gynecology, Sri Ramachandra Institute Of Higher Education And Research, Chennai, Tamil Nadu, India.

Study Duration: December 2019 to November 2020.

Sample size: 178 patients.

Inclusion criteria:

Antenatal women admitted during gestational age between 26weeks to 36weeks+6 days in preterm labor with intact membrane and had a preterm delivery.

Exclusion criteria:

1. Abruptio Placenta
2. Preterm Premature Rupture of membrane

Methodology:

In this study, mothers admitted in preterm labor with intact membrane were identified and who fulfilled the criteria mentioned above were enrolled as cases after obtaining an informed consent. Detailed history taking, general, systemic and obstetrical examination were done paying special attention to presence or absence of conventional risk factors for preterm labor. All women with preterm labor were investigated for presence of infection by complete hemogram, CRP, urine culture and vaginal swab culture. Women in active phase of labor (>4cm dilatation), with signs and symptoms of chorioamnionitis, antepartum hemorrhage and those with any medical contraindication to tocolytics were not given tocolysis. Those patients who had preterm premature rupture of membrane and abruption were excluded from the study. The aim of using tocolytics was to delay delivery for at least 48 hours to complete course of antenatal corticosteroids and to promote fetal lung maturity. All patients were followed till delivery. Risk factors related to preterm labor, maternal and neonatal outcome were recorded and analysed.

Statistical Analysis:

Gestational Age was considered as primary outcome variable. Tocolysis, Steroids was considered as primary explanatory variable.

Descriptive analysis:

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency, and proportion for categorical variables. Non normally distributed quantitative variables were summarized by median and interquartile range (IQR). Data was also represented using appropriate diagrams like bar diagram, pie diagram and box plots. Categorical outcomes were compared between study groups using Chi square test /Fisher's Exact test (If the overall sample size was < 20 or if the expected number in any one of the cells is < 5, Fisher's exact test was used.)

P value < 0.05 was considered statistically significant. IBM SPSS version 22 was used for statistical analysis. (1)

1.IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.

III. Results

Table 1: Distribution of study population according to age groups:

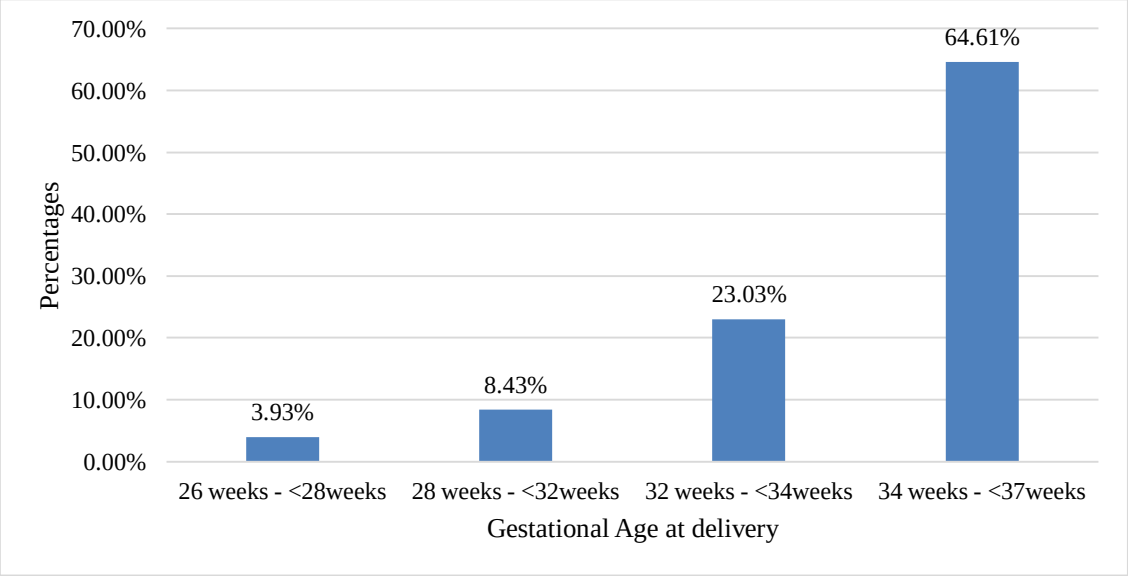
Age (in years)	No of Patients (n=178)	Percentages
<20	35	19.66%
21-30	79	44.38%
31-40	62	34.83%
>40	2	1.12%

Among the study population, 35 (19.66%) were aged <20years, 79 (44.38%) were aged between 21-30years, 62 (34.83%) were aged between 31-40 years and 2 (1.12%) were aged >40years.

Table 2: Distribution of study population according to gestational age at delivery:

Gestational Age at delivery	No of Patients (n=178)	Percentages
26 weeks - <28weeks	7	3.93%
28 weeks - < 32 weeks	15	8.43%
32 weeks - < 34 weeks	41	23.03%
34 weeks - < 37 weeks	115	64.61%

Figure 1: Bar chart of Distribution of study population according to gestational age at delivery



Among the study population, 7 (3.93%) patients delivered between 26 weeks - < 28 weeks, 15 (8.43%) delivered between 28 weeks - < 32 weeks, 41 (23.03%) delivered between 32 weeks - < 34 weeks and 115 (64.61%) delivered between 34 weeks - < 37 weeks (Table 2 and Figure 1).

Table 3: Distribution of study population according to Parity:

Parity	No of Patients (n=178)	Percentages
Primi	69	38.76%
Multi	109	61.24%

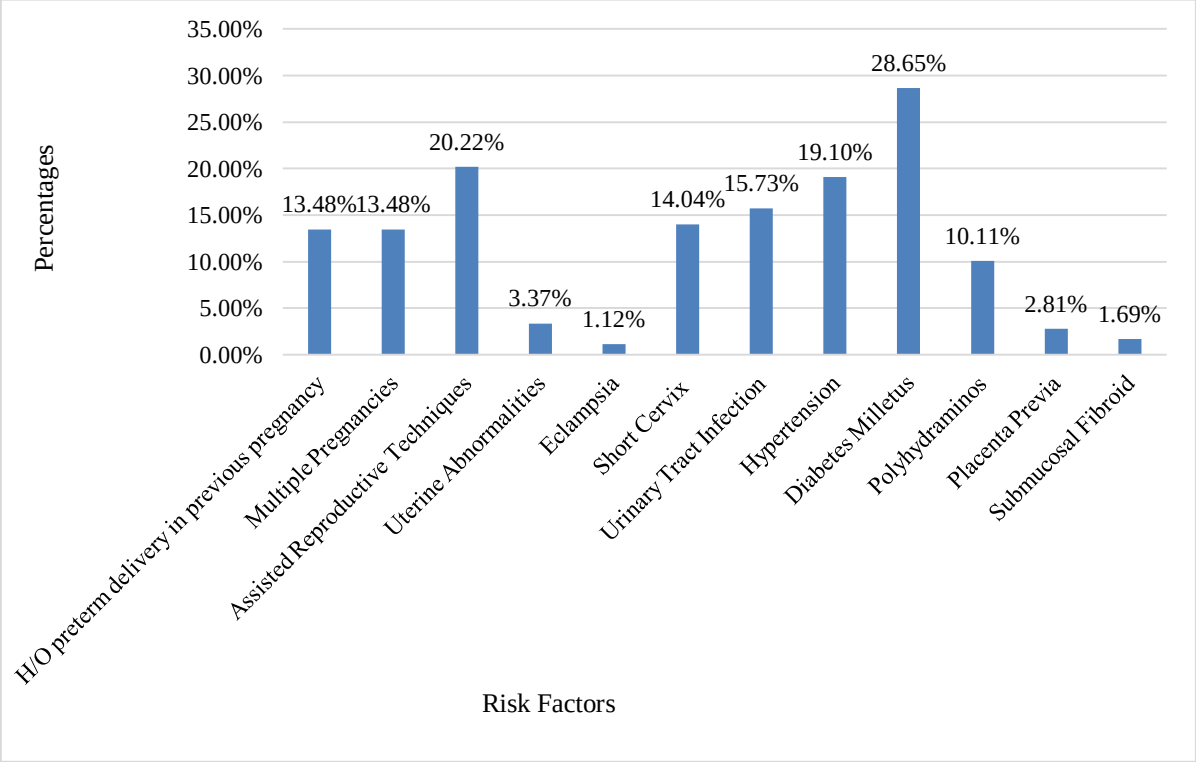
Among the study population, 69 (38.76%) were Primigravida and 109 (61.24%) were Multigravida.

Table 4: Descriptive analysis of Risk factors for Preterm delivery in the study population:

Risk factors for Preterm delivery	No of Patients (n=178)	Percentages
H/O preterm delivery in previous pregnancy	24	13.48%
Multiple Pregnancies	24	13.48%
Assisted Reproductive Techniques	36	20.22%
Uterine Abnormalities	6	3.37%
Eclampsia	2	1.12%
Short cervix	25	14.04%
Urinary Tract Infection	28	15.73%
Hypertension	34	19.10%
Diabetes Mellitus	51	28.65%
Polyhydramnios	18	10.11%
Placenta Previa	5	2.81%

Submucosal Fibroid	3	1.69%

Figure 2: Bar chart of Risk factors for Preterm delivery in the study population (n=178)



Among the study population, 24 (13.47%) patients had history of preterm delivery in previous pregnancy, 24 (13.48%) had multiple pregnancies, 36 (20.22%) had assisted reproductive techniques, 6 (3.37%) had uterine abnormalities, 2 (1.12%) had Eclampsia, 25 (14.04%) had short cervix, 28 (15.73%) had Urinary Tract Infection, 34 (19.10%) had hypertension, 51 (28.65%) had diabetes mellitus, 18 (10.11%) had Polyhydramnios, 5 (2.81%) had placenta previa and 3 (1.69%) had submucosal fibroid. (Table 4 and Figure 2)

Table 5: Descriptive analysis of Risk factors of Fetus for Preterm delivery in the study population:

Risk factors of fetus for Preterm delivery	No of Patients (n=178)	Percentages
IUGR With Doppler Changes	29	14.36%
Congenital Anomaly	8	3.96%

Among the study population, 29 (14.36%) patients had fetus with IUGR with Doppler changes and 8 (3.96%) had congenital anomaly.

Table 6: Descriptive analysis of significant investigations in the study population

Significant Investigation	No of Patients (n=178)	Percentages
Leukocytosis	22	12.36%
Significant bacteriuria	28	15.73%
Elevated CRP	17	9.55%

Among the study population, 22 (12.36%) had Leukocytosis, 28 (15.73%) had Significant bacteriuria, 17 (9.55%) had Elevated CRP.

Table 7: Distribution of study population according to Steroid coverage:

Steroids covered	No of Patients (n=178)	Percentages
Yes	98	55.06%
No	80	44.94%

Among the study population, 98 (55.06%) patients had steroid coverage and 80(44.94%) patients were not covered with steroids.

Table 8: Descriptive analysis of tocolytics administration in the study population

Tocolytics administration	No of Patients (n=178)	Percentages
Yes	5	2.81%
No	173	97.19%

Among the study population, 5 (2.81%) patients had received tocolytics and 173 (97.19%) not received tocolytics.

Table 9: Distribution of study population according to Administration of MgSO4:

Mgso4 Coverage	No of Patients (n=178)	Percentages
Yes	26	14.61%
No	152	85.39%

Among the study population, 26 (14.61%) patients had MgSO4 coverage and 152 (85.39%) not received MgSO4.

Table 10: Distribution of study population according to mode of delivery

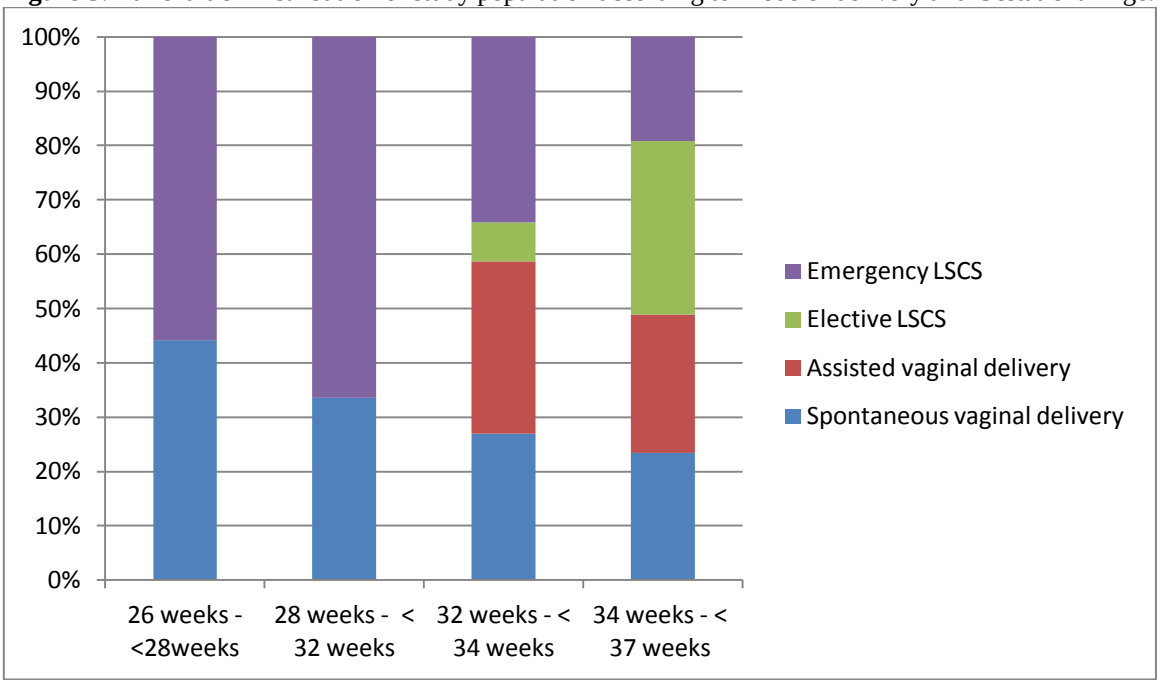
Mode of Delivery	No of Patients (n=178)	Percentages
Spontaneous vaginal delivery	52	29.21%
Assisted Vaginal Delivery	4	2.25%
Elective LSCS	18	10.11%
Emergency LSCS	104	58.43%

Among the study population, 52 (29.21%) had Spontaneous Vaginal Delivery, 4 (2.25%) had Assisted Vaginal Delivery, 18 (10.11%) had elective LSCS and 104 (58.43%) had Emergency LSCS.

Table 11: Distribution of study population according to Mode of delivery and Gestational Age:

Gestational age at delivery	Spontaneous vaginal delivery (n=52)	Assisted vaginal delivery (n=4)	Elective LSCS (n=18)	Emergency LSCS (n=104)
26 weeks - <28weeks	2 (3.8%)	-	-	5 (4.8%)
28 weeks - < 32 weeks	3 (5.8%)	-	-	12 (11.5%)
32 weeks - < 34 weeks	11 (21.2%)	1 (25%)	1 (5.6%)	28 (26.9%)
34 weeks - < 37 weeks	36 (69.2%)	3 (75%)	17 (94.4%)	59 (56.7%)

Figure 3: Bar chart of Distribution of study population according to Mode of delivery and Gestational Age:



In our study, among 52 patients who had spontaneous vaginal delivery, 36 (69.2%) patients delivered between 34 weeks to <37weeks. Among 4 Assisted vaginal delivery, 1 (25%) delivered at 32weeks + 4 days and 3 (75%) delivered between 34 weeks to <37weeks. Among 18 patients who had undergone Elective LSCS, 1 (5.6%) delivered at 33weeks+6 days and 17 (94.4%) delivered between 34 weeks to <37weeks. Among 104 patients who had Emergency LSCS, 59 (56.7%) delivered between 34 weeks to <37weeks. (Table 11 and Figure 3)

Table 12: Distribution of preterm babies according to WHO classification of low birth weight:

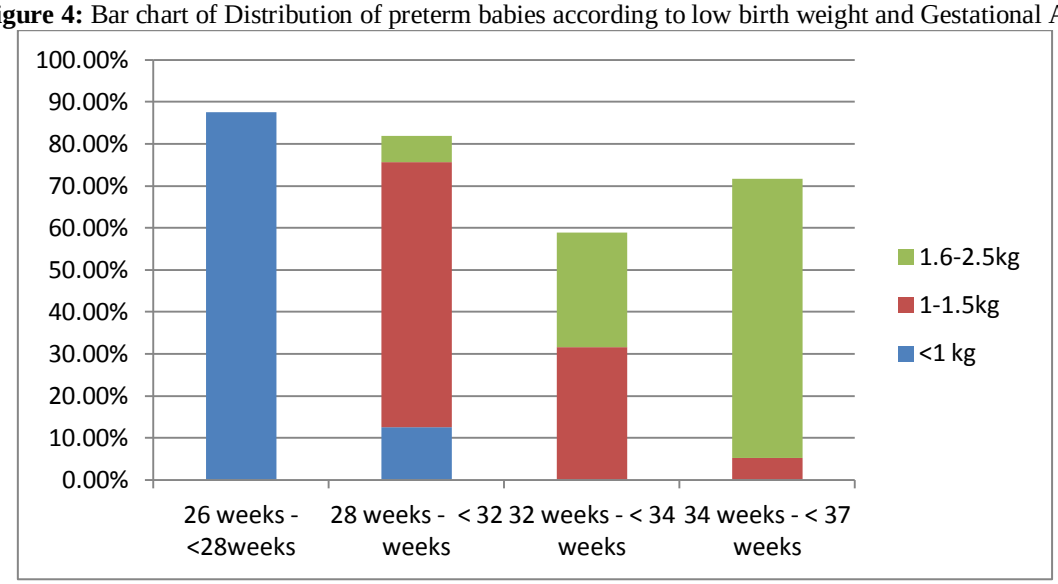
WHO classification of low Birth Weight	No of Preterm babies with Low Birth weight (n=155)	Percentages
< 1 Kg	8	5.16%
1 - 1.5 Kg	19	12.26 %
1.6 - 2.5 Kg	128	82.6%

Among 155 Preterm babies who had Low Birth weight, 8 (5.16%) babies were < 1 Kg, 19 (12.26%) babies were between 1-1.5 Kg, 128 (82.6 %) babies were between 1.6- 2.5kg.

Table 13: Distribution of preterm babies according to low birth weight and Gestational Age:

Gestational age at delivery	<1 kg (n=8)	1-1.5kg (n=19)	1.6-2.5kg (n=128)
26 weeks - <28weeks	7 (87.5%)	0	0
28 weeks - < 32 weeks	1 (12.5 %)	12 (63.1%)	8 (6.25%)
32 weeks - < 34 weeks	0	6 (31.6%)	35 (27.3%)
34 weeks - < 37 weeks	0	1 (5.3%)	85 (66.4%)

Figure 4: Bar chart of Distribution of preterm babies according to low birth weight and Gestational Age

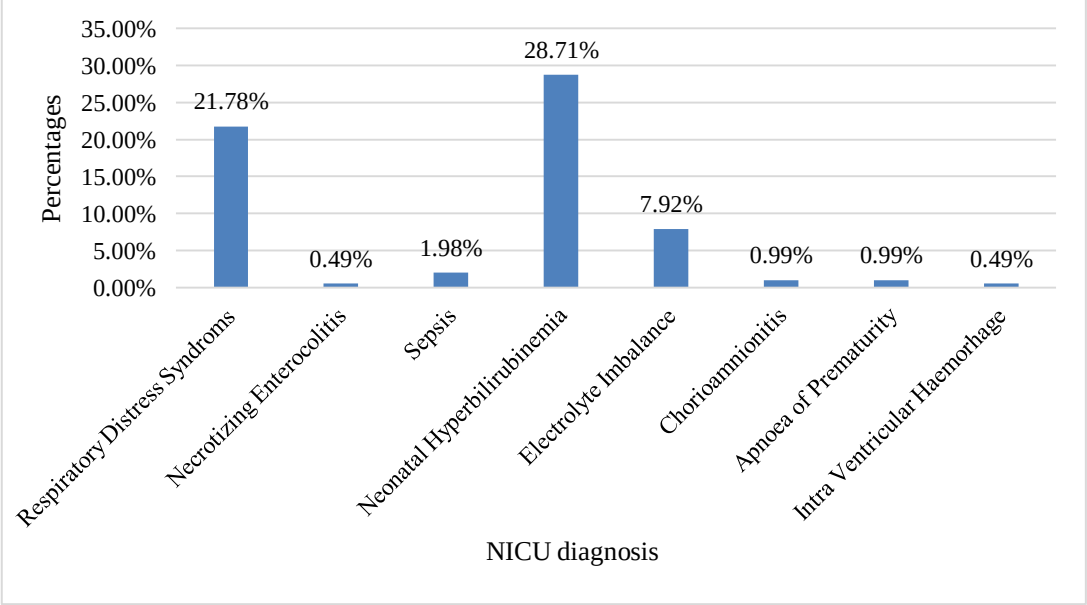


In our study, 7 (87.5%) babies delivered between 26- <28weeks had birth weight <1kg, 12 (63.1%) babies delivered between 28-<32weeks had birth weight of 1-1.5kg and 85 (66.4%) babies delivered between 34-<37weeks had birth weight of 1.6-2.5kg. (Table 13 and Figure 4)

Table 14: Distribution of Preterm babies according to Complications:

Complications	No of babies (n=202)	Percentages
Respiratory Distress Syndrome	44	21.78%
Necrotizing Enterocolitis	1	0.49%
Sepsis	4	1.98%
Neonatal Hyperbilirubinemia	58	28.71%
Electrolyte Imbalance	16	7.92%
Chorioamnionitis	2	0.99%
Apnoea Of Prematurity	2	0.99%
Intra Ventricular Haemorhage	1	0.49%

Figure 5: Bar chart of Distribution of Preterm babies according to complications:

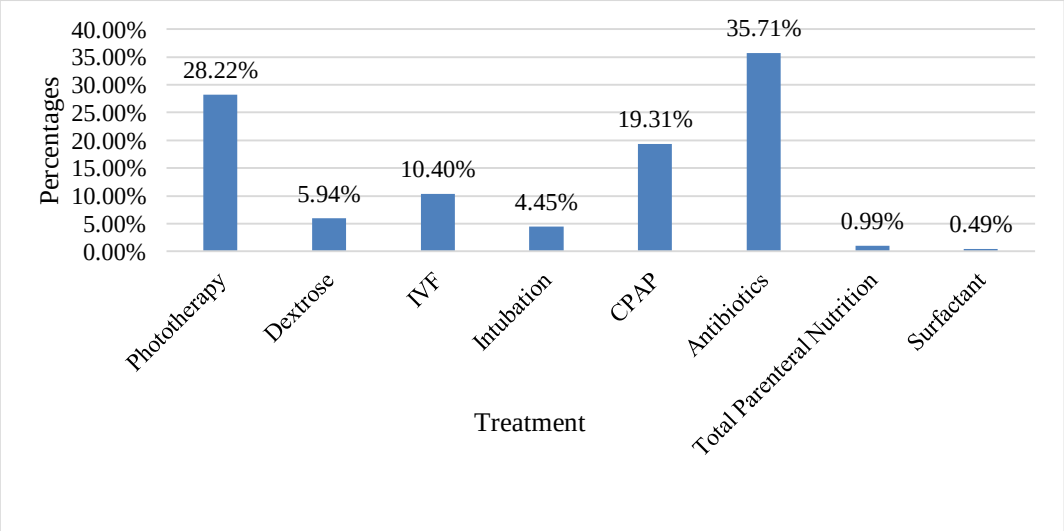


Among the study population, 44 (21.78%) had Respiratory Distress Syndrome, 1 (0.49%) had Necrotizing Enterocolitis, 4 (1.98%) had sepsis, 58 (28.71%) had Neonatal Hyperbilirubinemia, 16 (7.92%) had Electrolyte Imbalance, 2 (0.99%) had Apnoea of Prematurity and Chorio Amnionitis each and 1 (0.49%) had Intra Ventricular Haemorhage. (Table 14 and figure 5)

Table 15: Distribution of Preterm babies according to Treatment:

Treatment	No of babies (n=202)	Percentages
Phototherapy	57	28.22%
Dextrose	12	5.94%
IVF	21	10.40%
Intubation	9	4.45%
CPAP	39	19.31%
Antibiotics	45	35.71%
Total Parenteral Nutrition	2	0.99%
Surfactant	1	0.49%

Figure 6: Bar chart of Distribution of Preterm babies according to treatment:



Among the study population, 57 (28.22%) had Phototherapy treatment, 12 (5.94%) had dextrose treatment, 21 (10.40%) had IVF treatment, 9 (4.45%) had intubation treatment, 39 (19.31%) had CPAP treatment, 45 (35.71%) had antibiotics, 2 (0.99%) had administration of total parenteral nutrition and 1 (0.49%) had surfactant treatment. (Table 15 and Figure 6)

Table 16: Distribution of preterm babies according to duration of stay in NICU:

Duration of stay (in days)	No of babies (n=126)	Percentages
1 - 7 days	43	34.12%
8 - 15 days	35	27.78%
16 - 30 days	13	10.31%
1 - 3 months	6	4.76%

Among 202 babies delivered, 126 babies required admission in NICU. Among 126, 43 (34.12%) admitted in NICU between 1 - 7 days, 35 (27.78%) admitted in NICU between 8 - 15 days, 13 (10.31%) admitted in NICU between 16 - 30 days and 6 (4.76%) admitted in NICU between 1 - 3 months.

IV. Discussion

Preterm labor and delivery is reaching epidemic proportions throughout the world. McPheeters et al state that incidence of hospitalization for preterm labor is around 9% with only 38% delivering with the first hospitalization. According to annual statistics in USA, percentage of infants delivering preterm was continuously rising from11% to 12.3% in from1998 to 2003.

Incidence of preterm labor is increasing due to lifestyle modification, increased medical disorders, ART and better obstetrical intervention. Among the developing countries, India has a very high incidence of preterm labor (23.3%).

Age incidence:

In present study, majority of patients 79 (44.38%) were in age group of 21-30 years . The mean age was 29.02 ± 5.02 in the study population, minimum was 19 and maximum was 44 in the study population. (95% CI 28.28 to 29.77). In similar studies like Dingens et al from USA, majority (29%) of mothers in preterm labor were in age group of 20 -25 years[3]. Lakshmi et al from Telangana observed that majority of the women in preterm labor were between 21-30 years[4] which is similar to present study. But Philip et al from Kerala, India in their study on neonatal outcome of preterm births found that no significant association between maternal age and neonatal outcome in preterm births[5].

Gestational Age:

In the present study, majority of patients 115 (64.61%) were delivered at the Gestational age of 34 weeks to < 37 weeks. The mean gestational age was 34.15 ± 2.56 in the study population, minimum was 26 and the maximum was 36.60 in the study population. (95% CI 33.77 to 34.53). Similarly in studies like Granese et al, 71.83% were delivered at the Gestational age of 34 weeks to < 37 weeks[6] .

Parity:

In our study, among 178 patients who had preterm delivery, 69 (38.76%) were primigravidas and 109 (61.24%) were multigravidas. Mohsenzadeh et al in their study observed 19.7% of preterm delivery were in multigravidas which is not consistent with our study[7].

Risk Factors for Preterm delivery:

In our study, Diabetes Mellitus is the most common risk factor for preterm delivery found in 51 (28.65%) patients followed by Hypertension in 34 (19.10%) patients.

Carr-Hill and Hall have shown that in women with history of one preterm delivery, there is 15% chance of next preterm delivery and after two preterm deliveries, there is 32% chance[8]. In our study about 24 (13.48%) patients had history of previous preterm delivery.

According to Gonclaves et al, intrauterine infection is a major cause of preterm labor and accounts for approximately 25% of cases[9]. Wright et al identified urinary tract infection (UTI) as a significant risk factor, contributing to 7% of preterm births[10]. Uma et al did a study in Lucknow showing genitourinary infection as the second commonest cause for preterm labor (20.7%). In our study, the incidence of UTI was found to be 15.73%, the common organisms being Escherichia Coli, followed by Klebsiella and Staphalococcus Aureus. Screening for gonorrhea, chlamydia infections should be done for patients at high risk of preterm labor.

The incidence of Preterm delivery in patients who had undergone Assisted Reproductive techniques were 20.22% whereas in Multiple pregnancies it was 13.48%. 25 (14.04%) patients had short cervix in this study population. 29 (14.36%) patients had fetus with IUGR and Doppler changes and 8 (3.96%) patients had fetus with congenital Anomalies.

Steroids and MgSO4 coverage:

In our study, 98(55.06%) patients were given two doses of antenatal corticosteroids to accelerate fetal lung maturity and Respiratory distress syndrome was present in 26 (26.5%) babies and absent in 72 (73.4%) babies born to these mothers. Similarly in studies like Padma et al, Respiratory distress syndrome was present in 32% babies[11]. In our study, 26 (14.61%) patients were covered with MgSO4 for fetal neuroprotection.

Mode of Delivery:

In our study, among 178 patients in preterm labor, 122 (68.5%) were delivered by Cesarean section and 56 (31.5%) were delivered by Normal vaginal delivery. But in similar studies like Ussanee Sangkomkamhang et al, 38.4% were delivered by Cesarean section and 61.6% were delivered by Normal vaginal delivery[12].

Birth weight:

In our study, out of 202 babies delivered, 155 babies had Low birth weight (birth weight <2.5kg) and 47 babies had normal birth weight > 2.5kg. Among 155 low birth weight babies, 128 (82.6%) had birth weight between 1.6-2.5 kg. The combined low birth weight accounts for 77%. The mean baby weight was 2.13 ± 0.61 in the study population, minimum was 0.49 and the maximum was 4.22 in the study population. Henderson et al discussed that almost 57% of babies were LBW in mothers with gestational age of <37 weeks which is similar to present study but the percentage is lower than the present study[13].

Fetal Complications:

In our study, out of 202 babies, 58 (28.71%) had Neonatal Hyperbilirubinemia and 44 (21.78%) had Respiratory Distress Syndrome. According to Sehgal et al, neonatal hyperbilirubinemia (78%) and RDS (65%) were the two most common causes of morbidity in preterm babies which is higher than the present study[14].

NICU admission:

In our study, out of 202 babies delivered, 126 (62.4%) babies were admitted in NICU. Among these, 43 (34.12%) babies admitted in NICU for 1-7 days and 35 (27.78%) babies for 8-15 days. Henderson et al in their study observed that 62.4% babies delivered <37weeks required admission in NICU which is similar to present study[13].

Neonatal death:

Sing et al reported that there was about 21% neonatal death in their study among which Intra Ventricular Haemorrhage was the most common cause of death (42%) followed by sepsis (31%)[15]. In contrast, our hospital has an overall neonatal mortality rate of 3.4% which indicates good neonatal care. Respiratory Distress syndrome (RDS) was the most common cause of neonatal death (50%) followed by Severe Metabolic Acidosis (33%) in our study. There were 5 neonatal deaths in babies delivered less than 34 weeks gestational age and only one neonatal death in babies delivered more than 34 weeks gestational age. This indicates the benefit of prolonging pregnancy beyond 34 weeks with the help of tocolytics and steroids in cases of preterm labor. Various studies on neonatal outcome showed incidence of RDS was significantly higher in preterm babies with no steroid coverage.

V. Conclusion

A baby born prematurely can cause huge emotional and psychological impact on mother and great financial burden on family. Preterm infants are at increased risk of developing overall morbidity and mortality. Clinical suspicion, early detection and correction of risk factors, institutional delivery and good neonatal care back up facilities can improve the outcome of preterm delivery.

References

[1]. WHO | Care of the preterm and/or low-birth-weight newborn. WHO. 2014;

[2]. Akhter G, Rizvi SM, Hussain SI. Evaluation of perinatal outcome in preterm labour. Sch Int J Obstretics Gynec. 2020;3(6):147-52.

[3]. Dingens AS, Fairfortune TS, Reed S, Mitchell C. Bacterial vaginosis and adverse outcomes among full-term infants: a cohort study. BMC Pregnancy Childbirth. 2016;16(1):1-8.

[4]. Laxmi U, Agrawal S, Raghunandan C, Randhawa VS, Saili A. Association of bacterial vaginosis with adverse fetomaternal outcome in women with spontaneous preterm labor: a prospective cohort study. J Matern Neonatal Med. 2012;25(1):64-7.

[5]. Philip T, Thomas P. A prospective study on neonatal outcome of preterm births and associated factors in a South Indian tertiary hospital setting. Int J Reprod Contraception Obstet Gynecol. 2018;7(12):4827.

[6]. Granese, R., Gitto, E., D'Angelo, G. et al Preterm birth: seven year retrospective study in a single centre population. Ital J Pediatr 45,45 (2019).

[7]. Mohsenzadeh A, Saket S, Karim A. Prevalence of preterm neonates and risk factors. Iran J Neonatol. 2011;2(2):38-42.

[8]. Carr-Hill RA, Hall MH. The repetition of spontaneous preterm labour. Br J Obstet Gyneacol 1985;92:921-8.

[9]. Gonclaves LF, Chaiworapongsa T, Romero R. Intrauterine infection and prematurity. Ment Retard Dev Disabil Res Rev 2002;3-13.

[10]. Wright SP, Mitchell EA, Thompson JM et al. Risk factors for preterm birth; a New Zealand study. NZ Med J. 1998 111;14-6.

[11]. Padma Shukla, Meena Bhargava, Disha. Study on Maternal and fetal outcome in Preterm Premature rupture of membrane. Journal of Evolution of Medical and Dental sciences 2014; Vol.3, Issue 07,February17; Page: 1789-1795.

[12]. Sangkomkamhang U, Pattanittum P, Laopaiboon M, Lumbiganon P. Mode of delivery and outcomes in preterm births. J Med Assoc Thai.2011 Apr;94(4):415-20.PMID:21591525.

[13]. Henderson J, Carson C, Redshaw M. Impact of preterm birth on maternal well- being and women's perceptions of their baby: a population-based survey. BMJ Open. 2016;6(10).

[14]. Sehgal A, Telang S, Paseah SM et al. Maternal profile and immediate outcome in extremely low birth weight babies. Delhi Trop Doct 2004;34:165-8.

[15]. Singh D, Varghese PV, Singh S. Outcome of hospitalised out-born preterm babies. Indian J Matern Child Health 1992;3:4-7.

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