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"A Study on Burden of Preterm Birth in Selected Hospitals in Chitradurga"

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ABSTRACT

Background: The world health organization defines preterm birth as birth before 37 completed weeks of gestation. determinant of short-and long term morbidities in infants and children and can have serious long term health consequences& the economic and social cost of preterm birth is high. Hence it is a time felt need to ascertain the causes and outcome of preterm labor and also the neonatal care resources available in most Indian nurseries.

Objectives: To study the burden of preterm birth**,** the factors associated with preterm birth and the prevalence of low birth weight babies.

Materials and Methods: A prospective observational study was conducted on a total of 108 pregnant women's who were admitted before the normal gestational period in hospitals (Basaveshwara Medical College Hospital and Research Centre, Government Hospital, Basappa Hospital) at Chitradurga. The data were collected from admitted preterm babies medical records and nominal registers from NICU.

Results: Respiratory disorder(41.8%) and LBW(10.1%) are the major burden of the preterm birth. PPROM(35.3%) followed by not getting prenatal care(17.6%), multifetal pregnancy(13.9%) and underweight mother(12.9%) are the common risk factors of preterm birth. Prevalence of low birth weight of the babies is 97.2% that is 1 in every ≈2 individuals will be effected with low birth weight. p-value is (0.00) which signifies the strong relation between the risk factor and the low weight of the baby.

Conclusion: Malnutrition, risk factors of the mothers are the major contributing for the death and low birth weight infants. This can be reduced by preterm babies have to be referred timely, improving antenatal care of pregnant women and timely interventions have to be done.

Key words: Preterm birth , respiratory disorders, PPROM, LBW baby, risk factors.

I. INTRODUCTION

The world health organization defines preterm birth as birth before 37 completed weeks of gestation, or fewer than 259 days since the first day of the women' last menstrual period (LMP).This is further sub divided on the basis of gestational age (GA):

- Extremely Preterm (< 28 weeks) ;
- Very Preterm (28 - < 32 weeks) ;
- Moderate or Late Preterm (32 - < 37 completed weeks of gestation)[1].

Each year 15 million babies are born preterm worldwide. India is the biggest contributor to the world's prematurity burden. Globally prematurity is one of the leading causes of under-five deaths. More than 1 in 10 of the world's infants is born too early every year. Almost 1 million children die each year due to complications of preterm birth. It is also the most important determinant of short-and long term morbidities in infants and children and can have serious long term health consequences[2]. Moreover, the economic and social cost of preterm birth is high. Hence it is a time felt need to ascertain the causes and outcome of preterm labor and delivery and also the neonatal care resources available in most Indian nurseries.

In spite of intensive neonatal care, immaturity at birth has lifelong impact on various systems. The babies may have feeding difficulty, temperature instability, hypoglycemia, infection, respiratory distress syndrome, bronchopulmonary dysplasia, apnea of prematurity, jaundice, gastroesophagal reflux, retinopathy of prematurity, germinal matrix haemorrhage, intraventricular haemorrhage and anemia of prematurity. Moreover, the adverse long term outcomes were motor disability, conginitive difficulties, attention deficit hyper activity disorder, and long term respiratory consequences such as asthma and bronchitis[3].

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The major cause for PTB is preterm premature rupture of membranes. The other risk factors identified including a prior history of PTBs, underweight mothers, uteroplacental insufficiency, intra uterine vascular lesions, obesity, diabetes, hypertension, smoking, infection, maternal age, genetics, multi fetal pregnancy, and pregnancies spaced too closely[4]. Also another important risk factor for PTB is the consumption of too much of sweets[5].

Low birth weight is defined by the WHO as weight at birth less than 2500 gm. It is one of the major determinants of perinatal survival, infant morbidity and mortality as well as the risk of developmental disabilities and illnesses in future. Neonatal death among infants weighing 1500-2500 grams is 20 times higher than among infants of normal weight. WHO estimated that about 25 million LBW are born each year, nearly 95% of them in developing countries[6].

Every year, 1.1 million babies die from complications of preterm birth. Low birth weight is not only a major predictor of pre natal mortality and morbidity, but it is found to also increase the risk for non-communicable diseases such as diabetes and cardiovascular disease later in life[7]. LBW continues to be a significant public health problem globally and is associated with a range of both short and long term consequences such as respiratory distress syndrome, intraventricular hemorrhage, and retinopathy of prematurity[8].

Hence in Conclusion, this study will be conducted in order to broaden the idea related to the preterm birth and identify the major risk factors associated with it.

II. MATERIALS AND METHOD

This is a prospective observational study conducted at NICU department of three hospitals in Chitradurga (Basaveshwara Medical College Hospital and Research Centre, Government Hospital, Basappa Hospital.) for a period of 6 months. A total of 108 subjects who satisfied the study criteria and assent to participate in this study were include in the study. The complete project was done after obtaining the permission granted by the ethical committee of Sri Jagadguru Mallikarjuna Murugharajendra College of Pharmacy, Chitradurga.

STUDY CRITERIA

INCLUSION CRITERIA:

- Preterm admission of pregnant women with gestational period < 37 weeks.
- The newborn babies admitted in NICU with gestational age < 37 weeks.

EXCLUSION CRITERIA:

- Other than the above mentioned three hospitals in Chitradurga.

Statistical Analysis

All the relevant data was entered in MICROSOFT EXCEL and was analysed by SPSS software(version 27).Categorical data was analysed using descriptive methods (mean), point prevalence assessment method, chi-square test, Pearson correlation for correlation, fisher extract test.

III. RESULT

Objective 1: To study the burden of preterm birth.

- **Details of Burden of Preterm birth.**

This table shows the burden associated with preterm birth. In our study involving 108 subjects, 45 (41.8%) subjects is found to have respiratory disorder with low birth weight, 11 (10.1%) subjects having low birth weight, rest of the 26 (24.3%) subjects were not having any burden associated with preterm birth.

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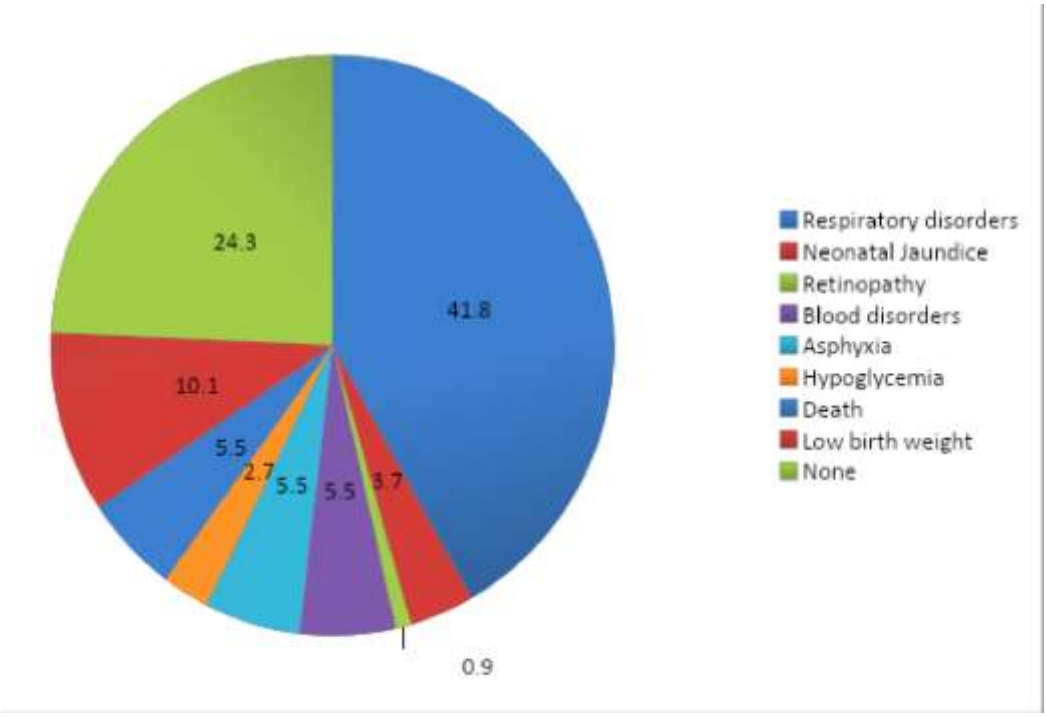

Figure No 8: Graph showing details of burden of Preterm Birth.

Details of Infant weight Classification

This table shows the infant weight classification enrolled in our study. The maximum number of infants 78 were found to weigh about 1.6-2.5 kg (72.2%), which is low birth weight followed by 27 infants weighing around < 1.5 kg (25.1%), which is very low birth weight and 3 infants having normal weight of above 2.5 kg (2.7%).

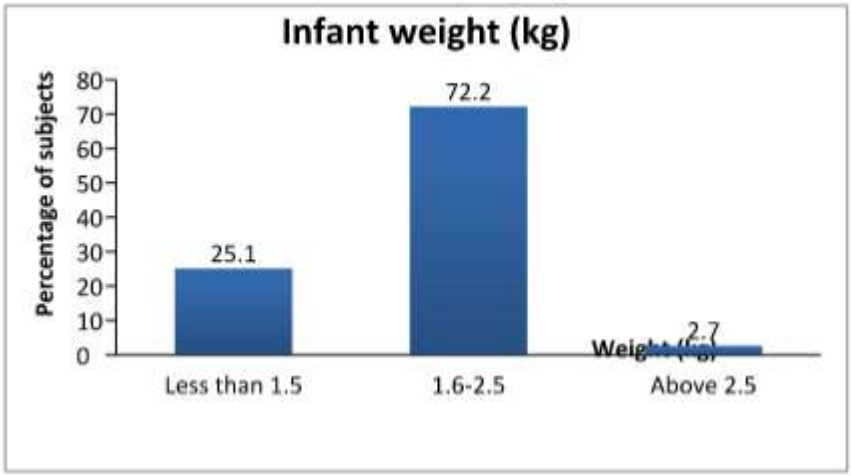

Figure No 9: Graph showing Details of Infant weight (kg) classification (n=108)

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No. of subjects dead: 06
Normal birth weight is 2.5- 4.5 kg, from the above table we can interpret that 2.7% of the subjects are normal weight, 97.3% is under weight. So it is evident that low birth weight, poor nutrition is the reason for the infantile death.

Objective 2: **To study the factors associated with preterm**

- **Risk factor for premature birth classification.**

The most common risk factor for the preterm birth were found to be PPROM (35.3%), Not getting prenatal care (17.6%), Multi fetal pregnancy (13.9%) and underweight mother (12.9%).

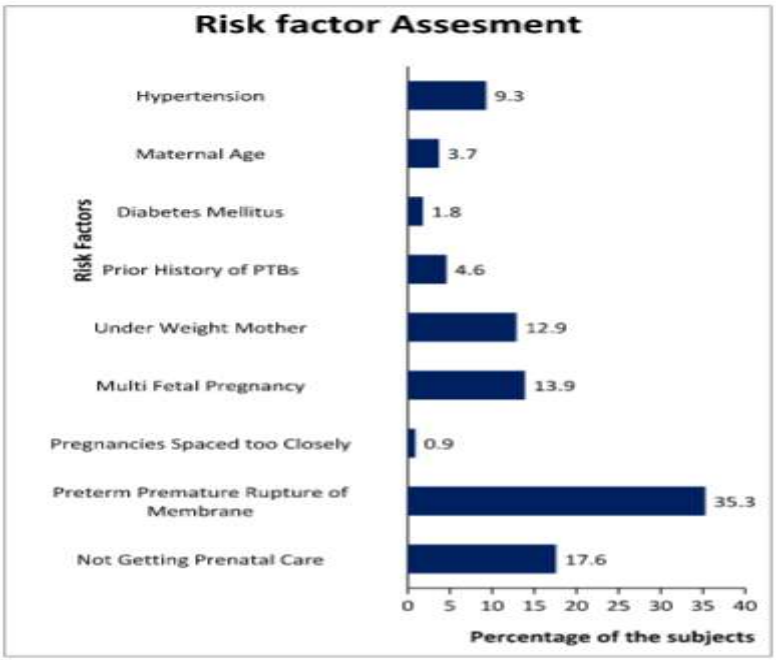

Figure No 10: Graph showing risk factor Assesment

Objective No 3:
To study prevalence of low birth weight babies.
Prevalence assessment:

Prevalence = Number of population with disease at a given time X 100
Total number of population at a given time

105/108 *100 = 97.2

Prevalence of low birth weight of the babies is 97.2 that is 1 in every ≈2 individuals will be effected with low birth weight.

Sl. No	Risk factor	Avg. birth weight (kg)	Frequency	Percentage
1	Not Getting Prenatal Care	1.6	19	17.7

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2	Preterm Premature Rupture of Membrane	1.9	38	35.1
3	Pregnancies Spaced too Closely	1.1	01	0.9
4	Multi Fetal Pregnancy	1.6	15	13.9
5	Under Weight Mother	1.7	14	13.0
6	Prior History of PTBs	1.8	05	4.6
7	Diabetes Mellitus	1.7	02	1.8
8	Maternal Age	1.2	04	3.7
9	Hypertension	1.8	10	9.3
	TOTAL		**108**	**100**

Table No 11: Association between risk factors of mothers V/s infant weight (kg)

IV. DISCUSSION

This study is conducted to assess the risk factors for preterm birth and perinatal outcome in terms of perinatal mortality and morbidity for infants born at less than 36 weeks gestation. As known, premature births are increasing in recent years and the highest rate of mortality and morbidity are seen in this age. In the present study 108 preterm admissions were collected from the various hospitals in Chitradurga.

There are more preterm males than females in the present study compared to the study conducted by **Ugwu M,** who reported more preterm females.

In our study, The commonest risk factor for prematurity is preterm premature rupture of foetal membranes (35.3%) followed by lack of antenatal care (17.6%). This is similar to findings by **Shrestha et al.**, in Nepal who reported lack of antenatal care as the commonest risk factor for preterm births among their patients.

Multiple pregnancy ranked as third as a risk factor for preterm delivery in the present study. Similarly **Zeleke BM et al.,** have also reported multiple pregnancy as a risk factor for preterm delivery. This is not surprising as multiple pregnancy has been shown to contribute to the increase in percentage of preterm births with the average gestational age of twin birth being 35 weeks. The popular hypothesis is that multiple pregnancy causes over distension of the uterus which may stimulate premature uterine contractions resulting in preterm delivery.

In our study we have found that respiratory disorders (41.8%) and LBW (10.1%) are the most common burden of the preterm birth and which is shown in the table no (8)and graphically represented in fig no(8).This correlates with the results of study conducted by **Kunle-Oluwu OE et al** in it 68.8% respiratory disorders followed by jaundice and sepsis.

In our study, we have found a LBW prevalence rate of 97.2%, which is much higher than the prevalence rate of 60.9% reported in the study conducted by **Raman TS R et al.**

And there is a strong relation between risk factors of mothers and infant weight. Which shown in the table no.(11).

V. CONCLUSION

In the present study, following conclusions were made:

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- Prevalence of low birth weight of the babies is 97.2 that is 1 in every ≈2 individuals will be effected with low birth weight
- P-value is (0.00) which signifies the strong relation between the risk factor and the low weight of the baby.
- Malnutrition, risk factors of the mothers are the major contributing for the death and low birth weight infants.

Our study have revealed that respiratory disorders and LBW are the major cause of NICU admission in hospitals of Chitradurga due to the preterm birth. So an improvement in the NICU with adequate ventilator as well as appropriate diagnostic and management facilities in order to reduce the morbidity and mortality due to preterm birth.

Problems related to preterm birth can be reduced by considering the main risk factor PPROM followed by lack of not getting prenatal care and counselling should be started from adolescent period, high risk pregnancy and preterm babies have to be referred timely, improving antenatal care of pregnant women and timely interventions have to be done.

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REFERENCES

[1]. **Dimes M.PMNCH,** save the Children, WHO. The global action report on preterm birth. Geneva: World Health Organization, 2012.

[2]. **Blencowe H, Cousens S, Oestergaard MZ, et al.** National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications. Lancet2012; 379:2162–72.

[3]. **Goldenberg RL, Culhane JF, Iams JD, et al**. Epidemiology and causes of preterm birth. Lancet 2008;371:75–84.

[4]. Marlow N, Wolke D, Bracewell MA, Samara M. Neurologic and developmental disability at six years of age after extremely preterm birth. The New England Journal of Medicine 2005;352 (1): 9–19.

[5]. **Strandberg TE, Järvenpää AL, Vanhanen H, et al.** Birth outcome in relation to licorice consumption during pregnancy. Am J Epidemiol2001;153:1085–8.

[6]. **Zeleke BM, Zelalem M, Mohammed N.** Incidence and correlates of low birth weight at a referral hospital in Northwest Ethiopia. The Pan African medical journal. 2012;12:4.

[7]. **Tellapragada C, Eshwara VK, Bhat P, Acharya S, Kamath A, Bhat S,**

[8]. **et al.** Risk Factors for Preterm Birth and Low Birth Weight Among Pregnant Indian Women: A Hospital-based Prospective Study. J Prev Med Public Health. 2016; 49(3):165–75.

[9]. **Basso O, Olsen J, Christensen K.** Low birth weight and prematurity in relation to maternal factors: A study of recurrence. International Journal of Epidemiology. 1999; 28(4):695–700.

[10]. **Menon R.** Spontaneous preterm birth, a clinical dilemma: etiologic, pathophysiologic and genetic heterogeneities and racial disparity. Acta ObstetGynecol Scand. 2008;87:590–600.

[11]. **Hudi I, Pedersen B, Tomi V.** Preterm Birth: Pathophysiology, Prevention, Diagnosis, and Treatment. BioMed Research International Volume 2015:1

[12]. **Saigal S, Doyle LW.** An overview of mortality and sequence of preterm birth from infancy to adulthood. Lancet. 2008;371(9608):261–9.

[13]. Van Os, Ven VD, Kazemier B, Haak M, Pajkrt E, Mol B, Groos C. "Individualizing the risk for preterm birth: An overview of the literature". Expert Review of Obstetrics& Gynecology2013;8 (5): 435–442.

[14]. **Koucky M, Germanova A, Hajek Z, Parizek A, Kalousova M, Kopecky P.** Pathophysiology of preterm labor. Prague Med Rep. 2009;110(1):13-24.

[15]. **Hermes-DeSantis ER, Clyman RI.** Patent ductusarteriosus: pathophysiology and management. Journal of Perinatology 2006;26:S14–S18.
[16]. **Gotsch F, Romero R, Kusanovic JP, Mazaki-Tovi S, Pineles BL, Erez O, Espinoza J, Hassan SS.** The fetal inflammatory response syndrome. ClinObstet Gynecol. 2007 Sep;50(3):652-83.
[17]. Goldenberg RL, Iams JD, Mercer BM, Meis PJ, Moawad AH, Copper RL et al. The preterm prediction study: the value of new vs standard risk factors in predicting early and all spontaneous preterm births. NICHD MFMU Network. American Journal of Public Health 1998; 88 (2): 233–8.
[18]. **El-Chimi MS, Awad HA, El-Gammasy TM, El-Farghali OG, Sallam MT, Shinkar DM.** Sustained versus intermittent lung inflation for resuscitation of preterm infants: a randomized controlled trial. Journal of Maternal-fetal & Neonatal Medicine 2017;11:1273-8.
[19]. **Rudell K, Panchal B. Preterm Labor:** Prevention and Management. Am Fam Physician. 2017 Mar 15;95(6):366-372.
[20]. Haas DM, Caldwell DM, Kirkpatrick P, McIntosh JJ, Welton NJ. Tocolytic therapy for preterm delivery: systematic review and network meta-analysis. BMJ 2012. 345: e6226.
[21]. ACOG practice bulletin. Management of preterm labor. Number 43, May 2003. Int J GynaecolObstet2003 Jul;82(1):127-35.