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A Retrospective Study on Low Birth Weight and Associated Maternal Factors in a Tertiary Care Hospital at Chennai

Dr.P.Gunasundari M.D, D.C.H Assistant Professor – Pediatric Department

Dr.G.Gurunathan M.D, D.C.H Assistant Professor – Pediatric Department

Dr.Christina Mary P.Paul M.D, Associate Professor – Community Medicine Department

ABSTRACT

Birth weight is the single most important criterion for determining the neonatal and infant survival. Low Birth Weight (LBW) is a sensitive indicator of the socio-economic conditions and indirectly measures the health of the mother and the child. Birth weight is the most important factor that affects the newborn, infant and child mortality. This was one year study done to find out the maternal risk factors affecting the birth weight of new born. The factors which were significantly associated with low birth weight was maternal anemia. It was found from the study LBW Neonates were more common among anemic mothers, female, birth order of second born or above, RH positive mothers with maternal age less than 30 years

KEYWORDS : Low birth weight, Maternal Anemia, Female Gender

INTRODUCTION:

Low birth weight (LBW) has been defined by WHO as weight at birth of less than 2.5 kg [1]. By international agreement, LBW has been defined as a birth weight of less than2500 grams, with the measurement being taken preferably within the first hour of life, before significant postnatal weight loss has occurred [2]. It contributes substantially to neonatal, infant, and childhood mortality and morbidity[3].Across the world, neonatal mortality is 20 times more likely for LBW babies compared to NBW babies (>2.5 kg)[1].

It is now a well recognized fact that birth weight is not only a critical determinant of child survival, growth, and development, but also a valuable indicator of maternal health, nutrition, and quality of life [4].The incidence of LBW is estimated to be 16% worldwide,19% in the least developed and developing countries, and 7%in the developed countries. Asia accounts for 75% of worldwide LBW followed by Africa (20%) and Latin America (5%). Birth weight is the single most important criterion for determining the neonatal and infant survival.

Low Birth Weight is a sensitive indicator of the socio-economic condition and indirectly measures the health of the mother and the child. In spite of consistent effort to improve the quality of maternal and child health, more than 20 million low birth weight babies are born every year throughout the world. Half of all perinatal and one thirds of all infants death were directly or indirectly related to low birth weight (5). It is generally acknowledged that the etiology of LBW is multifactorial (1). Hence a study was taken up to know the profile of neonates with low birth weight and also to identify the factors associated with it.

MATERIALS AND METHODS:

The present study was conducted in the department of OBG ward and neonatal intensive care unit (NICU). ACS medical college and Hospital from April 2015 to March 2016. It was a retrospective study of low birth weight neonate. Proforma was used to record information on age, sex, parity, birth weight birth interval between pregnancies, illness in mother. Investigations like maternal Hb%, PCV, Blood group, RH factor were done.

INCLUSION CRITERIA

All Babies born to mothers of birth weight less than 2500gms irrespective of the period of gestation have taken for this study.

EXCLUSION CRITERIA

New born babies birth weights more than 2500gms have been excluded from this study.

DEFINITION OF MAIN STUDY VARIABLE:

1. **LOW BIRTH WEIGHT:** Newborn babies with a birth weight of less than 2500 gms and including 2499 gms irrespective of the period of gestation. These include preterm [one-third] and small for dates[two-third babies] [6]
2. **VERY LOW BIRTH WEIGHT:** Newborn babies with birth weight of less than 1500gms [upto and including 1499gms] are designated as very low birth weight babies [6]
3. **MATERNAL ANEMIA:**Anemia is defined as low hemoglobin concentration resulting in a decrease in oxygen carrying capacity of blood. According to WHO, a hemoglobin level of 11gm% is considered as anemia during pregnancy. In India hemoglobin level less than 10gms is considered as anemia as defined by federation of obstetrics and gynecological society of India. [7]
4. **DATA COLLECTION:**Data was collected by tailor made interview schedule. The information needed was extracted from the medical record department. The data were tabulated including various maternal factors.

A cross – sectional study on the profile of neonates with low birth weight

Table 1: Profile of the neonates with low birth weight

Variable	Number (out of 51)	Percentage
Birth order		
First born	13	25.5
Second born or above	38	74.5
Gender of the baby		
Male	24	47.1
Female	27	52.9
Rh status of the mother		
Positive	49	98
Negative	1	2
Age of mother		
< 30 years	40	78.4
≥ 30 years	11	21.6
Maternal Anemia (<11g/dl)		
Present	30	58.8
Absent	21	41.2

Table 2: Profile of birth weight among neonates with low birth weight

Variable	Number	Percentage	95% C.I
Birth weight between 2000 - 2499 gms	47	92.2	84.84% - 99.56%
Birth weight below 2000 gms	4	7.8	0.44% - 15.16%

Table 3: Association between very low birth weight and certain suspected risk factors

Variable	Classification of variable (number of people in the group out of 51)	Number of neonates with extreme low birth weight (out of 28)	Chi – square value	P – value
Gender	Female (27)	4	2.08	0.15
	Male (24)	0		
Maternal Anemia	Present (30)	4	1.47	0.22
	Absent (21)	0		
Birth order	First (13)	3	3.13	0.08
	Second and above (38)	1		
Maternal age	Elderly mother > 30 years (11)	1	0.21	0.65
	Normal ≤ 30 years (40)	3		

Figure 1: Association between birth order and birth weight among neonates with low birth weight

FIG 1: shows relationship between birth order and birth weight. Very low birth weight neonates are more common among birth order of first and above.

RESULTS:

Low birth weight neonates were more among birth order of second born or above (74.5%) female gender (52.9%) RH positive mother (98%) with the age of less than 30 years (78.4%) and in maternal anemia (58.8%) (Table-1)

Of the neonates with low birth weight, 92.2 % had birth weight between 2000gms and 2499 Grams and 7.8% of the neonates had birth weight below 2000gms. Details can be seen in Table-2

The association between very low birth weight neonates and certain suspected risk factors were studied. Birth order of second or more, female gender, with maternal age < 30yrs with maternal anemia were seen to have more number of very low birth weight neonates .however none of these associations were not statistically significant. Details can be seen in Table 3

DISCUSSION:

Results of the present study shows young mothers delivered more number of very low birth weight babies though the association was statistically significant. This is in accordance with similar finding from other study (8,9)

Primi mothers gave birth to LBW neonates. Similar finding were found in other studies. (10, 11, 12).

In the current study there was an association between maternal anemia and very low birth weight. The association of anemia and LBW were supported by Kramer etal(1). The lack of statistical significance in the current study was due to the inadequate sample size studied because of time constraints, which was a limitation in the current study.

CONCLUSION:

The result of the study suggests that to reduce LBW, attention to be focused on maternal anemia, nutrition, encouraging wider birth interval and discouraging teen age pregnancy. This can be achieved by health education for adolescents (both male and female).and pregnant mothers in maternal and child health related programmes especially in rural areas.

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