Original Research Paper   **Medical Science**

Maternal Risk Factors for Low Birth Weight Neonate in Tribal Medicalcollege District Adilabad (Telangana)

* Dr Suryakant Mundlod	Assistant professor, Dept. of paediatric,Rajiv Gandhi institute of medical science Adilabad 504001,* Corresponding Author
Dr Smita Thakkarwad	Assistant professor , Dept.of Obstetric & Gynaecology, Rajiv Gandhi institute of medical science Adilabad 50400

ABSTRACT

Low birth weight (LBW) is a major determinant of infant mortality and morbidity. It is generally recognized that the etiology of LBW is multifactorial. Present case control study was conducted with the objective of studying maternal risk factors associated with full term LBW neonates. Total 1252 newborns were studied. Of these, 394 were low birth weight. The incidence of Low birth weight was found to be 31.94%. The mean birth weight was 2.60 with S.D. 0.50 kg. The Simple Linear Regression shows that maternal age, weight, haemoglobin (gm%), income, birth interval, Tab FS received were significantly associated with birth weight. Birth order, ANC visits, and T.T. doses received were found to have no significant association with low birth weight.

KEYWORDS   : Low birth weight, multivariate analysis, risk factors for low birth weight.

INTRODUCTION

Birth weight is a critical determinant of survival, growth and development of baby and also a valuable indicator of maternal health, nutrition and quality of life. Worldwide, out of 139 million live births about 23 million infants had low birth weight i.e. birth weight below 2500 gms1 In India the prevalence of low birth weight is about 26%2 .One of the factor of infant mortality is low birth weight. The maternal factors play crucial role in the birth weight of baby. The mortality of low birth weight can be reduced if the maternal risk factors are detected early and managed by simple techniques. This study has made an attempt to identify the maternal factors that have a significant association with low birth weight with the help of Linear Regression Model.

OBJECTIVES:
- To know the prevalence of low birth weight.
- To identify the maternal risk factors associated with low birth weight.

MATERIAL & METHODS:

Design: Hospital based observational study. Conducting in Rajiv Gandhi institute of medical science Adilabad, for a period of one year from 1st January 2015 to 31st December 2015.

METHODOLOGY:

All mothers giving birth to singleton live baby are included in the study.

The birth weight of new born was measured preferably within the first hour of life with conventional beam balance machine having accuracy of 100gm. Low birth weight is defined3 as birth weight less than 2500 gm i.e. up to and including 2499 gm. Mother's weight and height was taken as per guidelines given by Jelliffe4. The other information was collected by interview of the mother with pre-designed and pre-tested pro-forma and review of records like ANC cards. Main Outcome Measure: Birth Weight.

Statistical Analysis: A multivariate analysis by use of Epi-info Statistical Package

RESULTS:

A total of 1483 eligible mothers delivered during the study period. Of these, 129 left the hospital against medical advice and 21 absconded. Total 1252 (93.9%) mothers could

be studied. Of the total 1252 deliveries 394 were low birth weight. The incidence of low birth weight was found to be 31.94% with mean birth weight was 2.60 ± t 0.50 kg. The maternal factors-Age, Weight, Height, Haemoglobin (gm%), Income, Birth interval, Birth order, ANC visits, T.T. doses, Tab. FS received were studied in relation to birth weight by simple multiple linear regression analysis. Birth weight is considered as a dependent variable and other maternal factors as independent variable. Two steps were involved, in first step (Table No.1)

birth weight is tested with each variable individually and "r" (correlation coefficient), regression coefficient (b) with 95% confidence intervals and y-intercept for each factor were calculated. In the second step (Table No.2) simple multiple linear regression was applied. From the Table No.1, it was seen that the following maternal factors, had positive, & significant association with birth weight. 1. Maternal weight, 2. Height, 3. Haemoglobin (gm%), 4. Income, 5. Birth interval, 6. Tab. FS received. Negative and significant correlation is with the age of mother. The interesting finding in table No 2 is that the factors birth order, ANC visits, and T.T. doses when tested individually (Table 1), were significantly associated with birth weight but at second step (Table 2), these factors are not found to be significantly associated to birth weight, indicating that these factors are dependent on the other factors (confounding factors).

Table 1. Co-relation of various risk factors with LBW.

Risk factor	Correlation Coefficient r	Value B	95%Cl lower	95%CL upper	Y intercept
Age(yr)	-0.11	-0.0142	-0.0214	-0.0069	2.9362
weight	0.63	0.1019	0.094	0.1088	-1.9389
height	0.43	0.0434	0.0383	0.048	-3.76
Haemoglobin(gm%)	0.53	0.2646	0.2409	0.2882	0.1809
Income(Rs)	0.23	0.0001	0.0009	0.0001	2.3717
Birth interval	0.21	0.0891	0.0655	0.1126	2.4757
Birth order	-0.15	-0.0621	-0.0844	-0.0398	2.7335
ANC visits	0.34	0.1147	0.0972	0.1323	2.2856
T.T.doses	0.15	0.1475	0.0947	0.2004	2.3719
Tab Fs received	0.36	0.1219	0.1041	0.1396	2.3938

Table 2. Multiple Linear regression analysis of risk factors of LBW

Risk factor	mean	B coeffi-cient	95%Cl lower	95%CL upper	Stand-ard Eror	F-test
Age(YR)	23.9633	-0.02167	-0.0298	-0.0135	0.0041	27.05
Weight(kg)	44.4888	0.0675	0.0591	0.0758	0.0042	252.98
height	146.4065	0.0076	0.0028	0.0123	0.0024	9.84
haemoglo-bin	9.1269	0.1118	0.0886	0.1350	0.0118	89.14
Income(RS)	1757.96	0.00003	0.000007	0.00005	0.00001	6.71
Birth interval	1.3491	0.0830	0.0620	0.1039	0.0106	60.40
Birth order	2.2133	0.0001	-0.0259	0.02625	0.0133	2.01
ANC visits	2.7029	-0.0166	-0.0397	0.0063	0.0117	2.01
T.T. doses	1.5176	0.0139	-0.0323	0.0603	0.0236	0.34
tab	1.6573	0.0495	0.0285	0.0705	0.0107	21.33

DISCUSSION:

Of the total 1252 deliveries 394 i.e. 31.46% were low birth weight. There is considerable variation in the prevalence of LBW in India. The disparity has ranged from a prevalence of 10% to 59%5. There is wide interregional, socio-economic and urban verses rural difference in the prevalence of LBW have been recorded. The prevalence of LBW was 30.3% as reported by Deshmukh(6), 32.2% by Mohammad Zafar(7) and 29% by Hirve8 which is comparable to our study. The simple multiple linear regression shows that maternal age, weight, haemoglobin (gm%), income, birth interval, Tab FS received have significant association with birth weight even if association of other factors is taken into account. Birth order, ANC visits and T.T. doses received have significant association with low birth weight when tested individually, but have no such association if other factors are taken into account. Various hospital based studies(9, 10, 11,12) with multivariate analysis show that the maternal risk factors are associated with low birth weight. Our findings are consistent with these studies.

CONCLUSION:

Many risks for LBW can be identified before pregnancy occurs. Health education, socioeconomic development, maternal nutrition, and increasing the use of health services during pregnancy, are all important for reducing LBW

REFERENCES:

1. World Health Report.: Fighting Diseases, Fostering Development, Geneva, 115-137,. 1996.
2. UNDP, Human Development Report, 2002., Deepening De'mocracy in a Fragmented world, Oxford University press, 2002.
3. WHO.: Multi-centre study on low birth weight and infant mortality in India, Nepal and Shrilanka.1994.
4. Jelliffe D. B.: The assessment of the nutritional status of the community. WHO monograph series No 53; 67-68. 1966.
5. Bhargava S. K.: A review of causes and factors contributing to neonatal mortality. Recent experiences with methods for identification of low birth weight at risk infants in community: A paper presented in seminar on infant and child mortality. New Delhi, Jan. 1985.
6. Deshmukh JS., Motghare DD., Zodpe SP., Wadhva SK., : Low birth weight and associated maternal factors in an urban area. Ind. J Pediatr. 35, 33-36, 1998.
7. Mohammad Zafer I., Gupta A., Uday M., Shrivastava AK., Das V.,: Maternal health and low birth weight among institutional deliveries .Ind. J Comm. Med. XXV, 4, 156-160.2000.
8. Hirve SS., Ganatra BR., : Determinants of low birth weight. A community based prospective cohort study. Ind. Pediatr., 31, 10, 1221-1225.1994
9. Bhatia BD., Tyagi NK., : Maternal determinants of birth weight. A multivariate analysis.; Ind. J Paediatr. 1994 .
10. Dechering WH., Perera RS., : A secondary analysis of determinants of Low Birth weight.: Ceylon Med J., 36, 2, 52-62.1991.
11. Ferraz EM., Gray RH., Cunha TM.,: Determinants of pre-term delivery and intrauterine growth retardation in NorthEast Brazil.: Int. J Epi.19,1,101-108.1990.
12. Matthews M., Saramma J., Karthikeyan NG.: Birth weight standards for South Indian Babies.: Ind. Pediatr, 33, 203-209.1996.