IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 22, Issue 3 Ser.17 (March. 2023), PP 45-49
www.iosrjournals.org

A Study on Prevalence and Risk Factors for Low Birth Weight in Term Pregnancy Among Institutional Deliveries

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Abstract:
Introduction- Low Birth Weight Is A Major Public Health Problem In Developing Countries Like India[(1)]. Birth Weight Is One Of The Important Unambiguous Measurement Applied Throughout The World And Is Recognized As Sensitive Index Of The Health Status Of New Born Aim- To Know Prevalence Of Low Birth Weight And Know The Association Of Various Risk Factors With Institutional Deliveries. Methodology- A Cross Sectional Study Was Conducted Among820 Mothers Attending Institutional Care For Safe Delivery With Help Of Pretested Questionaires. Results- 27.2 % Of Total Study Sample Had Low Birth Weight In This Study. Various Factors Like Hb%, Education, Occupation, Hb%, IFA Tablets Consumption, Overcrowding, Showed Statistical Significance In This Study In Causing Low Birth Weight. Conclusion- Low Birth Weight Is Still Health Issue That Needs To Be Addressed.

Key Words- *Low Birth Weight, Institutional Deliveries, Risk Factors. Prevalence*

Date of Submission: 14-03-2023 Date of Acceptance: 30-03-2023

I. Introduction

Low Birth Weight Is A Major Public Health Problem In Developing Countries Like India[(1)]. Birth Weight Is One Of The Important Unambiguous Measurement Applied Throughout The World And Is Recognized As Sensitive Index Of The Health Status Of Newborn. It Also Determines The Health Status Of Pregnant Women And Course Of Fetal Development. Birth Weight Is The Single Most Important Determinant Of Chances Of Survival, Growth And Development Of A New Born[(2)(3)(4)].

In 1976,The 29thworld Health Assembly Agreed On The Following Definition-Low Birth Weight Is Birth Weight Less Than 2500 Grams(Upto And Including 2499 Grams)Irrespective Of Gestational Age, Preferably Taken Within One Hour Of Birth. The Cut Off Has Been Set Like This To Make International Comparisons Based On Epidemiological Observation, Which States That Infants Weighting Less Than 2500 Grams Are Approximately 20 Times More Likely To Die than Babies Born With Birth Weight Greater Than 2500 Grams.[(5)(6)]

It Is Estimated That Every Year 15.5% Of All Global Live Births Are Of Low Birth Weight Of Which 95% Occur In Developing Countries. The Estimated Level Of Low Birth Weight In Developing Countries Is Double To That Of Low Birth Weight In Developed Countries.[(7)(8)]

South East Asian Region Has The Highest Prevalence That Is50% Of All Global Low Birth Weight. India Contributes About 40% Of All Asian Low Birth Weight Which Is Highest Proportion Among Asian Countries. There Is Large Interstate Variation Of Low Birth Weight In India With Average National Estimate Remaining As Much As 28%[(8)].Low Birth In Andhra Pradesh Is 28.3%As Per Nfhs-3[(9)].

The Etiology Of Low Birth Weight Is Complex And Multifactorial With Demographic, Nutritional, Reproductive, And Socioeconomic Factors Playing Potential Role And It Is An Index Of Status Of Public Health, Maternal Health And Nutrition In Particular[(10)]. It Is An Indicator Of Future Health And Child Survival. It Is Often The Spectrum Of Fetal Growth Restriction. It Reflects The Past And Present Health Status Of Mother[(11)].It Is The Major Determinant Of Perinatal Survival, Infant Mortality And Morbidity As Well As Risk Of Developmental Abilities And Illness Throughout Future Lives[(12)]. Thus, Birth Weight Reflects Many Factors Related To Mother And Fetus. Hence This Study Titled "**A Study On Risk Factors For Low Birth Weight Among Institutional Deliveries"** Was Undertaken In King George Hospital And Victoria General Hospital To Ascertain The Prevalence Of Low Birth Weight And To Identify Factors Associated In Causation Of Low Birth Weight And Their Association To Each Other In Causing Low Birth Weight.

Aim And Objectives

1. To Know The Prevalence Of Low Birth Weight Among Institutional Deliveries.
2. To Know Various Factors And Their Associations In Causing Low Birth Weight.

II. Methodology

Study Design A Hospital Based Cross Sectional Study Conducted At King George Hospital And Victoria General Hospital Which Are The Two Teaching Hospitals Attached To Andhra Medical College. Study Population Mothers Admitted For Safe Institutional Delivery In King George Hospital And Victoria General Hospital. Sample Size Calculation - According To The National Neonatal Perinatal Database Of The National Neonatology Forum, India; The Incidence Of Lbw In Tertiary Care Centers Is 32.8%[13]

Formula- $4pq/L^2$

P- Prevalence, Q=1-P, L=10% Of Prevalence

4 * 32.8 * 67.2 / 3.28 * 3.28 = 820

Inclusion Criteria All The Mothers Who Gave Consent To Participate In The Study And Who Were Admitted In Hospital During Study Period Were Included. Exclusion Criteria Mothers Who Were Not Willing To Participate And Those With Multiple Gestations Were Excluded.

Study Tools–Structured Questionnaires, Patient Case Sheet In Wards, Baby Weighing Scale, Adult Weighing Machine, Stethoscope, Mercury Type Sphygmomanometer, Measuring Steel Tape. Birth weight recorded immediately after child birth was considered for study **Haemoglobin Level** Which Was Done Recently After Admission In The Hospital Was Recorded And Was Used For Analysis.

Data AnalysisData Was Analyzed By Microsoft Excel And Spss Trail Version 21.StatisticalTest Chi Square Test Was Applied To Test The Association Between Variables And Birth Weight. Mean And Standard Deviation Were Calculated For Numerical Data. Suitable Diagrams And Tables Were Used For Representation Of The Data.

III. Results

Prevalence Of Low Birth Weight Among Study Population

Of The 820 Study Population,576 (70.2%) Of Mothers Delivered Babies With Normal Weight , 223 (27.2%) Of The Babies At Birth Were Low Birth Weight And 21 (2.6%) Babies Had Very Low Birth Weight At Birth

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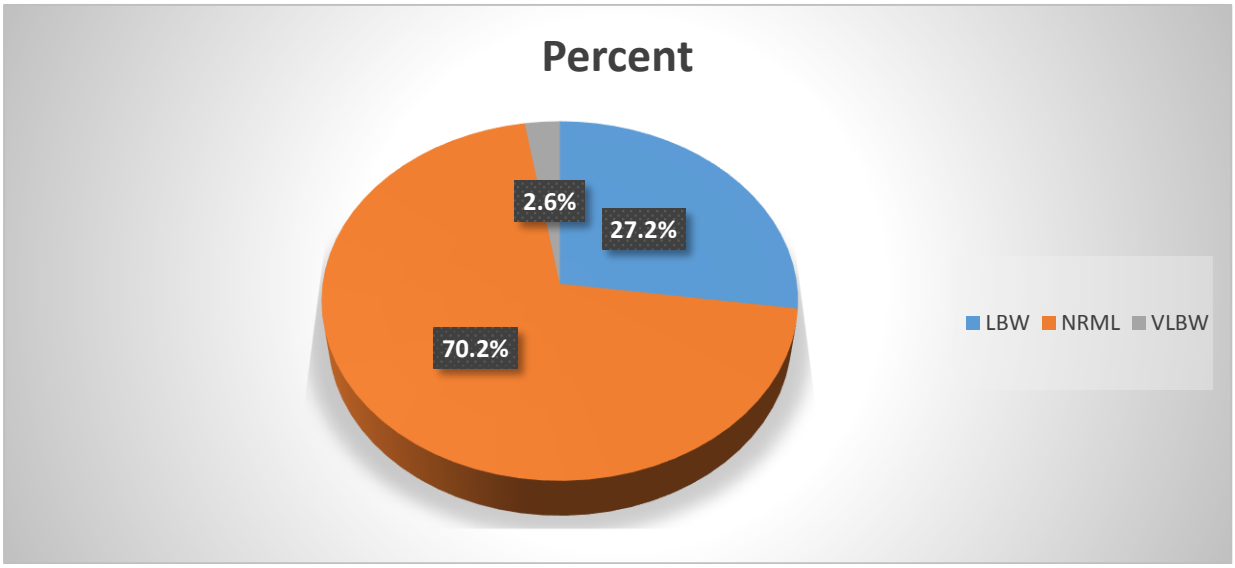

Table Showing Means Among Study Population

	Total	Minimum	Maximum	Mean	Std. Deviation
Age Of Mother	820	15	35	22.87	3.008
Age Of Husband	820	20	36	26.91	3.334
Income	820	1000	15000	4018.29	1258.231
Hb	820	2.0	12.0	8.371	1.1305

Association Of Low Birth Weight With Other Variables

Haemoglobin Vs Child Birth Weight

Hb Group	Child Birth Weight		Total	
	Lbw	Normal		P Value
Normal	10(16.6%)	50(83.4%)	60(100%)	
Mild Anaemia	78(28.9%)	148(71.1%)	226(100%)	P<0.001
Moderate Anaemia	124(39.51%)	366(60.49%)	490(100%)	

Severe Anaemia	32(72.7%)	12(27.3%)	44(100%)	

Height Of Mother Vs Child Birth Weight

Height Of Mother	Child Birth Weight		Total	P Value
	Lbw	Normal		
<145cms	44(53.1%)	39(46.9%)	83(100%)	P<0.001
>145cms	200(27.1%)	537(72.9%)	737(100%)	

Education Of Mother Vs Child Birth Weight

Education Of Mother	Child Birth Weight		Total	P Value
	Low	Normal		
Illiterate	37(57.81%)	27(42.19%)	64(100%)	
Primary	42(50%)	42(50%)	84(100%)	
Middle	45(31.47%)	98(68.53%)	143(100%)	P<0.001
High	76(25.94%)	217(74.06%)	293(100%)	
Inter	30(22.06%)	106(77.94%)	136(100%)	
Graduate	13(13%)	87(87%)	100(100%)	

Age At Marriage Vs Low Birth Weight

Age At Marriage	Child Birth Weight		Total	P Value
	Low	Normal		
<18	105(36.59%)	182(63.41%)	287(100%)	
19-30	137(25.89%)	392(74.11%)	529(100%)	P<0.01
>30	2(50%)	2(50%)	4(100%)	

Consanguinity Vs Child Birth Weight

Consanguinity	Child Birth Weight		Total	P Value
	Low	Normal		
Absent	171(26.67%)	468(73.24%)	639(100%)	P<0.001
Present	73(40.33%)	108(59.67%)	181(100%)	

Iron Folic Acid Duration Vs Child Birth Weight

Duration Of Ifa Intake	Child Birth Weight		Total	P Value
	Low	Normal		
<3 Months	43(53.75%)	37(46.25%)	80(100%)	P<0.001
>3 Months	201(27.16%)	539(72.84%)	740(100%)	

Complications Vs Child Birth Weight

Complications During Pregnancy	Child Birth Weight		Total	P Value
	Low	Normal		
Not Present	161(24.77%)	489(75.23%)	650(100%)	P<0.001
Present	83(48.83%)	87(51.17%)	172(100%)	

Gestational Age Vs Child Birth Weight

Gestational Age	Child Weight		Total	P Value
	Low	Normal		
>37weeks	157 (23.58%)	509 (76.42%)	666 (100%)	P<0.001
<37 Weeks	87 (56.49%)	67 (43.51%)	154 (100%)	

Birth Order Of Child Vs Low Birth Weight

Birth order Of Child	Child Birth Weight		Total	P Value
	Low	Normal		
Primi	116(33.9%)	278(66.1%)	394(100%)	
2	80(26.8%)	219(73.2%)	299(100%)	P<0.01
3	31(32.7%)	64(67.3%)	95(100%)	

>4	17(53.12%)	15(46.88%)	32(100%)	

IV. Discussion

Haemoglobin Vs Low Birth Weight

The Present Study Showed Significant Association Between Haemoglobin Status Of Mother And Birth Weight Of Child .Similar Association Of Haemoglobin With Low Birth Weight Was Found In Studies Conducted By Meghasharma Et Al In Maharashtra

Study Done By Manisha Lb Et Al In Maharashtra Reported Statistical Significance Of Anaemia In Causing Low Birth Weight Babies Narayana Murthy Et Al In Their Study In Mysore Showed Association Of Low Birth Weight With Prematurity, Uterine Complications, Short Stature, Anaemia, Nuclear Family ,Socio Economic Status And High Parity. Nirmalaya M Et Al In Their Study In West Bengal Reported Association Of Anaemia With Low Birth Weight.

Height Of Mother Vs Birth Weight

There Is Significant Association Between Height Of Mother And Low Birth Weight In This Studymanisha Lb Et Al In Their Study In Maharashtra Shows Significant Association Of Maternal Height Less Than 145 Centimetres In Causing Low Birth Weight Similar Findings Were Shown In Many Studies Conducted In India And Abroad. Narayanamurthy Et Al In His Study Conducted In Mysore And Study Conducted By Nirmalaya Et Al In West Bengal Showed Similar Association.

Maternal Education Vs Low Birth Weight

From The Table 5.12, It Is Clear That Maternal Education Has Very Important Role In Birth Weight. In This Study We Can Observe That As Maternal Education Increased There Was Decrease In Low Birth Weight And Their Association Is Found To Be Statistically Significant. Similar Results Has Been Reported By Many Studies Manisha Lb Et Al In Their Study In Maharashtra Reported Significant Association Of Maternal Education With Low Birth Weight Johnson Ar Et Al In Their Study In Karnataka Reported Association Of Maternal Education As Risk Factor For Low Birth Weight Rajalakshmi Et Al In Her Exploratory Study Conducted In Tamil Nadu In Reported Significant Association Of Maternal Education With Low Birth Weight. In Study Done By Rahul Hd Et Al [(12)] In Tamil Nadu Reported Maternal Education Is Related With Low Birth Weight.

Age At Marriage Vs Low Birth Weight

Maternal Age <18 And Above Was Associated With Increase In Low Birth Weight. The Association Was Found To Be Significant In This Study. Similar Results Are Found In Many Other Studiesmanisha Lb Et Al In Their Study In In Maharashtra Reported Significant Association Of Age Of Mother <20 And >30 As Risk Factor For Low Birth Weight Rajalaxmi Et Al In Their Study In Tamilnadu Reported Significant Association Of Maternal Age And Birth Weight Of Child Michel Ofari F Et Al [(20)] In Their Community Based Study In Ghana In Revealed The Risk Of Deliveries Of Low Birth Weight With Maternal Age <18 And Above 35 Years

Ifa Duration Vs Low Birth Weight

Low Birth Weight Was Seen To Be More Among Mothers Who Had Not Taken Complete Course Of Iron Folic Acid Tablets That Is Less Than 3 Months Duration (53.75%) Compared To Mothers Who Took Iron Tablets For More Than 3 Moths Duration(27.16%) The Association Was Found To Be Statistically Significant(X^2=24.417, Df=1. P<0.001)

In Study By Narayana Murthy Et Al In Mysore Reported Strong Association Of Iron Folic Acid Intake And Duration With Child Birth Weight A Hospital Based Study In Pune By Kafia Hashim Et Al Revealed Iron Folic Acid Intake As Risk Factor For Low Birth Weight

Complications During Pregnancy Vs Low Birth Weight

From Table Mothers Who Had Antenatal Complications Had Babies Born With Low Birth Weight (48.83%) As Compared To Mothers Who Do Not Have Any Complications (24.77%). There Is Significant Association Of Low Birth Weight With Mother Who Had Antenatal Complications(X^2=37.913, Df= 1, P<0.001).Similar Association Was Reported In Many Other Studies In Hospital Based Study By Ikenna K Et Al [(25)] In Nigeria Reported Significant Association Of Hypertension During Pregnancy And Antepartum Haemorrhage With Low Birth Weight Megha Sharma Et Al In Their Study In Lucknow Found Significant Association History Of Haemorrhage During Pregnancy As Associated Risk Factor For Low Birth Weight Manisha Lb Et Al In Their Study In Maharashtra Reported Pregnancy Induced Hypertension As Risk Factor For Low Birth Weight

Various Above Said Studies Also Showed Associations Of Low Birth Weight With Other Variables

V. Conclusions

Low birth weight is usually due to multiple factors and it is difficult to find universal solution. The incidence of low birth weight can be reduced if the antenatal care is started soon after conception and care should be continued throughout till delivery and after delivery till mother recovers completely. Specific protective measures like supplementary nutrition through ICDS, distribution of calcium and iron folic acid tablets, Immunization of tetanus toxoid, detection of urinary tract infection and treatment, detection of HIV and HBsAG early in pregnancy and monitoring for Rh negative antibodies in mothers will be extremely useful in prevention of low birth weight

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PAVANCHAND D, et. al. "A Study on Prevalence and Risk Factors for Low Birth Weight in Term Pregnancy Among Institutional Deliveries." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 22(3), 2023, pp. 45-49.