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Gynaecology

STUDY OF MATERNAL RISK FACTORS FOR LOW BIRTH WEIGHT BABIES IN TRIBAL POPULATION IN SOUTH RAJASTHAN

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ABSTRACT Low birth weight has been defined by WHO as weight at birth of less than 2.5 kg. (1) Neonatal mortality is 20 times more likely for low birth weight babies compared to Normal Birth Weight babies.(2) **15-20% of the neonates are low birth weight in India.(3)out of total 1107 deliveries in last three years**, 278 neonates were selected for the study amounting to 25.11% cases. 35(12.60 %) neonates were extremely low birth weight (less than 1000gm) and 110 (39.56%) were very low birth weight (less than 1500gm) and 133 (47.84%) low birth weight (less than 2500gm). 40 (14.38%) cases had Gestational age of 27 to31 weeks, 90 (32.37%) cases had gestational age of 32 to 36 weeks and 148 (53.23%) were in 37 to 40 weeks of gestation. 164 cases(59.00%) belonged to age group of less than 20 years. 169 (60.80%)cases were primigravida and 164 (59.00%) were less than 40 kg weight .204(73.38%) were unbooked .164 cases (59.00%) required caesarean delivery. 186 (66.90%) were anemic and 161 (57.91%) had various degree of pregnancy induced hypertension . 28 (10.07%) had ante partum hemorrhage. 92 (33.09%) had pre mature rupture of membranes and preterm labor. Regular antenatal care, prevention and treatment of anemia, pregnancy induced hypertension, preterm delivery can help in reducing perinatal motality and morbidity.

KEYWORDS : Low Birth Weight neonates, Very low birth weight neonates, Maternal causes of low birth weight neonates, Preterm labor, Pregnancy induced hypertension, Maternal anthropometry

INTRODUCTION

Low birth weight neonates include very low birth weight (VLBW), which is less than 1500 g (3 pounds 5 ounces), and extremely low birth weight (ELBW), which is less than 1000 g (2 pounds 3 ounces).(4) Normal weight at term delivery is 2500–4200 g (5 pounds 8 ounces – 9 pounds 4 ounces).(5) primary causes include spontaneous preterm labour, preterm prelabour rupture of membranes, hypertensive disease, antepartum haemorrhage, intrauterine death and congenital abnormalities.(6) Almost 50% of perinatal deaths are directly or indirectly related to LBW.(7) Those who survive have impaired immune function and increased risk of disease like diabetes and heart disease later in life. lower IQ and cognitive disabilities, affects their performance in school and their job opportunities as adults.(8) Pre-pregnancy weight, body mass index (BMI) and gestational weight gain socio-economic status (SES) maternal education, Maternal illiteracy and low SES have been shown to be major risk factors for IUGR (9)Though the major and primary determinant of birth weight is gestational age (10) Other factors include maternal age, maternal weight gain, pre-pregnancy weight, maternal height, parity, marital status, placental malfunction, smoking, heredity, gender of baby, working hours, and various socio-economic factors anthropometry of the mother and her nutritional intake are thought to be among the most important.(11) . Of the hypertensive cases, fetal distress, abruptio-placentae , Hypertension, preterm labor and pre labor rupture of membranes were the main causes of delivery of VLBW babies .(12) Timely management of causes and regular ante natal care will reduce neonatal mortality and morbidity. (13) The results of the strategy needs to focus attention on nutrition education to facilitate better weight gain during pregnancy, encouraging wider birth interval, avoidance of tobacco chewing and exposure to passive smoke and discouraging teenage pregnancy.(14)

MATERIAL AND METHODS

the present study has been undertaken to determine the maternal causative factors in low birth weight neonates and to suggest preventive measures. Study has been carried out at PACIFIC INSTITUTE OF MEDICAL SCIENCES UMARDA UDAIPUR RAJASTHAN . Period of study has been 2014 to 2017. This is retrospective study and the old records were reviewed by the author for fetal weight at birth and sex of neonate. single live births were included. Twin delivery, stillbirth , intrauterine deaths and congenital defects were excluded. Maternal age, parity, education, socio-economic status , period of gestation and type of delivery were included. Pre-existing maternal disease, anemia, hypertension, heart disease and liver disease were recorded. Maternal weight at first visit, maternal height, total ante natal visits, obstetric complications, drug and medication use, tobacco use were recorded. Maternal symptoms, amenorrhea ,swelling feet, weakness ,headache, bleeding or discharge per vagina were recorded. Physical findings, anemia, swelling feet and body , BP more than 130/ 90 mm of hg, twins mal presentations were recorded. Laboratory studies, hemoglobin , leucocyte count , blood sugar, urea, creatinine, liver enzymes ,urine albumin and sugar were recorded. Imaging studies, gestational age, ultrasonography, Placental localization, cervical lenth twins , congenital defects presentation and positions were noted. Fluid balance, tocolytic use and type, evidence of pre-eclampsia, infection, premature rupture of membranes, pre term labor and therapeutic measures ,type of delivery normal or caesarean section were also recorded. Pregnancy outcomes included gestational age at delivery, birth weight, mode of delivery, and Apgar scores were recorded.

Observation

Table 1 Maternal Age distribution of low birth weight neonates

s.no	Age in years	No of patients	percentage
1	Less than 20	164	59.00
2	20- 25	46	16.54
3	26-30	37	13.30
4	31-35	30	10.80
5	36 and more	1	00.36
		13	100

Result-Max 164 cases(59.00%) belonged to age group of less than 20 years ,46 (16.54%) were 20-25 years of age, 37 (13.30%) were 26 -30 years, 30(10.80%) were 31 -35 years and 1 (00.36%) was more than 36 years

Table 2 Maternal Parity distribution of cases of low birth weight neonates

s. no.	Parity	Number	Percentage
1	0	169	60.80
2	1	47	16.90
3	2	38	13.66
4	3	18	06.48
5	4	4	01.44
6	5	2	0.72
		13	100

Result max 169 (60.80%)cases were primigravida and para 0 . 47 (16.90%) cases were para1 , 38(13.66%) were para 2 , 18 (06.48%) were para 3, 4(01.44%) were para 4 , and 2 (0.72%) cases were para 5.

Table 3 Maternal weight and height distribution of low birth weight neonates

s.no	Maternal weight kg	No of patients	percentage
1	Less than 40	164	59.00
2	40-45	56	20.14
3	46 and More	58	20.86
4	Maternal height cm		
5	Less than 150	148	53.24
6	150-155	66	23.74
7	156 and above	64	23.02

Result - 164 (59.00%) were less than 40 kg weight, 56 (20.14%) were 40-45 kg and 58 (20.86%) were more than 46 kg.

148 (53.24%) were less than 150 cm , 66(23.74%) were 150-155cm and 64 (23.02%) were more than 156 cm

Table 4 Maternal ante natal care education socio economic status distribution of low birth weight neonates

s.no	Maternal antenatal visits	No of patients	percentage
1	nil	204	73.38
2	1-2	50	17.99
3	3 and more	24	08.63
	Maternal education		
4	Less than class 5	211	75.90
5	Class 5 to class 10	39	14.03
6	More than class 10	28	10.07
	Socio economic class		
7	Very low	138	49.65
8	low	85	30.57
9	middle	45	16.18
10	high	10	03.60

Result – max 204(73.38%) were totally unbooked without single antenatal visit, 50(17.99%) had 1-2 visits and 24 (08.63%)had regular antenatal visits

Maximum 211(75.90%) were illiterate 39 (30.57%) were less than 10 standard and 28(10.07%)were more than 10 standard

Most ladies 138(49.65%) were very low socio economic status, 85(30.57%) were of low 45 (16.18%) were middle and 10 (03.60% were from high status

Table 5 maternal risk factors of low birth weight neonate

S .no .	Maternal risk factors	number	percentage
1	Mode of delivery		
	Normal vaginal delivery	114	41.00
	Caesarean delivery	164	59.00
2	Anemia	186	66.90
	10gm% and more	92	33.09
	Mild 8-10 gm%	44	15.83
	Moderate 6- 8 gm%	88	31.66
	Severe less than 6gm%	54	19.42
3	Pregnancy induced hypertension	161	57.91
	Mild 130/90 and above	42	15.10
	Moderate 150/100 and above	54	19.42
	Severe 170/110 and above	48	17.27
	Eclampsia	17	06.11
5	Abruptio placentae	28	10.07
6	Pre term rupture of membranes	92	33.09
7	Weight of neonate Less than 1000 gm 1000- 1500 gm Less than 2500gm	35 110 133	12.60 39.56 47.84

Results- 164 cases (59.00%) required caesarean delivery and 114 (41.00%) were normal delivery. 186 (66.90%) were anemic with 54 (19.42%) severely anemic 88(31.66%) moderately anemic and 44(15.83%) were mildly anemic.161 (57.91%) had various degree of pregnancy induced hypertension. 42 (15.10%)Mild 54 (19.42%) moderately severe and 48 (17.27 %) severe .17 (06.11%) had eclampsia. 28 (10.07%) had ante partum hemorrhage. 92 (33.09%) had pre mature rupture of membranes nd preterm delivery. 35(12.60 %) neonates were extremely low birth weight (less than 1000gm) and 110 (39.56%) were very low birth weight (less than 1500gm) and 133 (47.84%) low birth weight (less than 2500gm).

Results

164 cases(59.00%) belonged to age group of less than 20 years ,46 (16.54%) were 20-25 years of age, 37 (13.30%) were 26 -30 years, 30(10.80%) were 31 -35 years and 1 (00.36%) was more than 36 years max 169 (60.80%)cases were primigravida and para 0 . 47 (16.90%) cases were para1 , 38(13.66%) were para 2 , 18 (06.48%) were para 3, 4(01.44%) were para 4 , and 2 (0.72%) cases were para 5. 164 (59.00%) were less than 40 kg weight, 56 (20.14%) were 40-45 kg and 58 (20.86%) were more than 46 kg. 148 (53.24%) were less than 150 cm , 66(23.74%) were 150-155cm and 64 (23.02%) were more than 156 cm max 204(73.38%) were totally unbooked without single antenatal visit, 50(17.99%) had 1-2 visits and 24 (08.63%)had regular antenatal visits. 211(75.90%) were illiterate 39 (30.57%) were less than 10 standard and 28(10.07%)were more than 10 standard Most ladies 138(49.65%) were very low socio economic status, 85(30.57%) were of low 45 (16.18%) were middle and 10 (03.60% were from high status- 164 cases (59.00%) required caesarean delivery and 114 (41.00%) were normal delivery. 186 (66.90%) were anemic with 54 (19.42%) severely anemic 88(31.66%) moderately anemic and 44(15.83%) were mildly anemic.161 (57.91%) had various degree of pregnancy induced hypertension. 42 (15.10%)Mild 54 (19.42%) moderately severe and 48 (17.27 %) severe .17 (06.11%) had eclampsia. 28 (10.07%) had ante partum hemorrhage. 92 (33.09%) had pre mature rupture of membranes nd preterm delivery. 35(12.60 %) neonates were extremely low birth weight (less than 1000gm) and 110 (39.56%) were very low birth weight (less than 1500gm) and 133 (47.84%) low birth weight (less than 2500gm).

Discussion

The global incidence of Low Birth Weight is estimated at 15.5% of all births with 95% of these low birth weight babies being born in developing countries.(15) Low Birth Weight can be preterm birth less than 37 weeks of gestation or small for gestational age or a combination of both.(16) young ages, low prity low maternal weight and poor nutrition anemia multiple pregnancies, previous Low birth weight , heart disease or hypertension, drug addiction, tobacco alcohol abuse, and insufficient prenatal care. uterine overdistension, decidual bleeding, and intrauterine infection as rubella, cytomegalovirus, toxoplasmosis, and syphilis .(17) LBW is closely associated with fetal and Perinatal mortality and Morbidity, inhibited growth and cognitive development, and chronic diseases later in life(18)

Low birth weight has been defined by WHO as weight at birth of less than 2.5 kg .(19) By international agreement, LBW has been defined as a birth weight of less than 2500 grams, with the measurement being taken preferably within the first hour of life, before significant postnatal weight loss has occurred . It contributes substantially to neonatal, infant, and childhood mortality and morbidity(20)

Across the world, neonatal mortality is 20 times more likely for LBW babies compared to NBW babies (>2.5 kg) 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 (21)

The incidence of LBW is estimated to be 16% worldwide, 19% in the least developed and developing countries, and 7% in the developed countries(22). The incidence of LBW is 31% in South Asia followed by East and North Africa (15%), Sub-Saharan Africa (14%), and East Asia and Pacific (7%). Asia accounts for 75% of worldwide LBW followed by Africa (20%) and Latin America (5%).(23) In Nepal, the LBW prevalence is relatively high, ranging from 14 to 32%, as documented from various hospital and community based studies . In a study done in Nepal, the LBW rate was found to be 27% out of which LBW babies at term constitute 70% and LBW babies before term (preterm) constitute 30% . 24.53% of the cases were illiterate.(24)

More than three-fourths of the mothers were housewivess. Majority (46.86%) of the respondent mothers were of 20–24 years. Teenage mothers constituted 19.18% of total mothers. More than one-fifth (22.01%) of the cases were born by teenage mothers, Nearly two-thirds (63.52%) of the respondents were below poverty level. (25)Maternal age, maternal weight, maternal height, and interpregnancy interval were found to be associated with low birth weight .The chance of

having LBW babies was also significantly higher in the mothers who were unbooked (26) But hypertension was found to be significantly associated with low birth weight babies. Mothers having hypertension during pregnancy were four times more likely to deliver LBW neonates than mothers having no hypertension .(27) Anaemic mothers were also more likely to deliver LBW babies mothers who were less than 140 cm in height were more prone to have LBW . Parity is also an important determinant of birth weight.(28)

In the present study primipara had 1.62 times more risk of delivering LBW babies; Risk of delivering LBW was 3.12 times higher in women who had history of tobacco chewing and were also exposed to passive smoking. The most widely accepted explanation is that, smoking causes fetal hypoxia by increasing carboxyhemoglobin levels, attenuating blood oxygen unloading to fetal tissue and reducing maternal blood supply to the placenta. The concentration of tar, nicotine, carbon mono-oxide, carbon dioxide are 2 to 10 times higher in side stream smoke than in the mainstream smoke. Studies have shown that passive smoking and tobacco chewing reduces the birth weight.(29)

In the present study 164 cases(59.00%) belonged to age group of less than 20 years , 169 (60.80%) cases were primigravida and para 0 . 164 (59.00%) were less than 40 kg weight, 148 (53.24%) were less than 150 cm , 204(73.38%) were totally unbooked . 211(75.90%) were illiterate 138(49.65%) were very low socio economic status, 164 cases (59.00%) required caesarean delivery and 114 (41.00%) were normal delivery. 186 (66.90%) were anemic .161 (57.91%) had various degree of pregnancy induced hypertension.. 92 (33.09%) had pre mature rupture of membranes nd preterm delivery. 35(12.60 %) neonates were extremely low birth weight (less than 1000gm) and 110 (39.56%) were very low birth weight (less than 1500gm) and 133 (47.84%) low birth weight (less than 2500gm). these findings are consistent with other workers.

Conclusions

Regular antennal care with early detection and treatment of anemia, pre- eclampsia, infection can markedly reduce incidence of low birth weight neonates and further reduce perinatal mortality and morbidity further ,nutrition education to facilitate better weight gain during pregnancy , focusing more on the girl-child education, regular antenatal care visits and discouraging teenage and old age pregnancy as well reduce poverty among rural women and creating more jobs and reducing exposure to tobacco chewing smoking or passive smoke, will go long way in prevention of such births.

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