# **Original Research Article**

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# A study of various determinates and incidence of low birth weight babies born in Umaid hospital, Jodhpur (Western Rajasthan)

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# **ABSTRACT**

**Background:** Low birth weight is one of the most serious challenges for maternal and child health in both developed and developing countries. It is the single most important factor that determines the changes of child survival. Nearly 50% of neonatal deaths occur among LBW babies. The survivors among them are at a higher risk of developing malnutrition, recurrent infections and neurodevelopment backwardness.

**Methods:** The present study was conducted at Department of Pediatrics, Dr. S. N. Medical. College, Jodhpur. Study Design: Cross sectional study. Sample size: 8266 consecutive live birth babies were enrolled. Inclusion Criteria: A total number of 8266 consecutive live birth babies were enrolled a total number of 2542 Low birth weight babies were delivered with birth weight 2.5 Kg. or less. Exclusion Criteria: (i) IUD babies, (ii) Still born babies, (iii) Lodger babies.

**Results:** Incidence of LBW babies were 30.725%, VLBW babies 2.71% and that of ELBW babies were 0.89%, Male, Female ratio was 1:1.09, 80% LBW babies were more than 1.8Kg, 73.05% babies were between 37-40 weeks of gestational age and 5.0% were extreme premature (<32 weeks) Teen aged mother and elderly mothers, Primi para and multiparty (4th and above) had increased incidence of LBW babies, 84.97% of LBW babies born normally, maximum number of mothers were from lower socioeconomic status (54.41%) were illiterate (41.8%). Tobacco addiction had adverse effects on birth weight. PIH was the most frequent complication (17.93%). Followed by APH (2.95%) and P.P.H. 1.41% Anemia was the most common (23.73%) medical illness followed by Chronic UTI 2.59%, TB 1.61% and RHD 1.18%.

**Conclusions:** Interventions to improve intrauterine growth and gestational duration by providing adequate caloric supplementation before and during pregnancy, febrile illnesses prophylaxis, or treatment, reduce tobacco chewing in mothers, avoid child bearing in young adolescents and in late reproductive age, improving maternal education, general improvement in nutrition and socio-economic condition and Improving sanitation and water supply.

Keywords: Incidence, Low birth weight, Prematurity, Preterm, Risk factors

# INTRODUCTION

Low birth weight is the term used to define infants who are born too small, and preterm birth is the term used to define infants who are born too soon. "Today's big baby

is tomorrow's healthy adult". Key note was given in international conference on "perinatal programming". Optimal size for a baby at birth is being discussed a lot. The optimal size of newborn baby was suggested by Millar et al. He Suggested 2500gms as a Limit between

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low birth weight and optimal birth weight. According to WHO expert group on prematurity 3 any neonate weighing 2500 gms or less than at birth is termed as low birth weight whether it is pre-term or term.<sup>3</sup>

The incidence of low birth weight is estimated to be 15% worldwide with a range of 3.3-3.8% and are mostly in developing countries. About 7-10 million low birth weight babies born annually in India. Which constitute 30-40% of total babies born in different part of India. The Incidence of LBW babies are very low in developed country i.e. in USA it is 5.9% Canada 6%, Indonesia 8% Maldives 13%. The incidence is very high in different parts of under developed and developing country, in Myanmar 24%, Pakistan 21%, Sri Lanka 27%, India 23%. In different states of India, the incidence are as follows- Andhra Pradesh 24%, Maharashtra 48%, Tamilnadu 37%, Utter Pradesh 34% west Bengal 49% Rajasthan 32%.

Various maternal factor affects the fetus directly or indirectly and are responsible for low birth weight baby. Complications of pregnancy like toxemia of pregnancy, ante partum hemorrhage, acute and chronic medical illness, like Anemia, chronic UTI, Tuberculosis, diabetes mellitus, smoking during pregnancy or other drug intoxication and alcohol/Tobacco ingestion also affects the fetal growth and responsible for causing low birth weight babies. The neonatal morbidity and mortality are very high in low birth weight babies.

#### **METHODS**

The present study was conducted in the Department of Pediatrics, Umaid hospital, Dr. S.N. Medical College, Jodhpur.

The sample was selected from 8266 consecutive live born babies delivered in the hospital during period for six months. All babies who were 2500 gms or below at birth were included in the study. All parameters of baby weighing 2500 gms or below are entered in performa. A detailed maternal history, complications of pregnancy, anthropometry of new born and gestational age of newborn (assessed by modified Perkin's criterion) is noted in performa.<sup>5</sup>

## Exclusion criteria

- IUD babies
- Still born babies
- Lodger babies.

### Maternal data

Detailed maternal history was taken in predesigned performa. Socio economic status was determined by modified method of Kuppuswami.<sup>6</sup> Statistical analysis was done by standard statistical methods.

#### **RESULTS**

Table 1: Incidence of low birth weight babies.

Type of cohort	No./%
Total number of live birth	8266
Total number of low birth weight babies	2542
Total number of mothers	2327
Incidence of low birth weight babies	30.725%
Total number of very low birth weight babies	225
Incidence of low birth weight babies	2.721%
Total number of extreme low birth weight babies	74
Incidence of extreme low birth weight babies	0.89%

Incidence of LBW babies during study period was 30.725% that of very low birth weight babies 2.721%. In our study, we had 0.89% of incidence of extreme low birth weight babies. Male and female ratio was 1:1.09.

Table 2: Distribution of babies according to their birth weight.

Weight	n =	%
0.5- 1 Kg.	74	2.91
1-1.5 Kg	151	5.94
1.5 - 2.0 Kg	481	18.92
2.0 - 2.5 kg	1836	72.22

Maximum number of low birth weight babies were belonging to weight group 2-2.5 kg (72.22%) followed by 1.5 - 2.0 kg (18.92%).

Table 3: Gestational age wise distribution of low birth weight babies.

Gestational age in weeks	n =	%
28-30	88	3.46
31-33	151	5.94
34-36	446	17.54
37-40	1857	73.05

73.05% of low birth weight babies belong to 37-40 weeks of gestation, followed by 34-36 weeks 17.54%, so maximum number of babies were term IUGR.

Table 4: Distribution of LBW babies according to LGA, AGA and SGA (weight for gestational age).

Wt. for Gestational age	n =	<b>%</b>
LGA	18	0.70
AGA	916	36.05
SGA	1608	63.25

Maximum number of LBW babies were small for gestational age (63.25%) followed by Appropriate for gestational age (36.03%). In our study 42.99% of LBW

babies were born to mother aged 42.99% followed by 33.04% in 26-30 years of age. 11.40% mothers were below 19 years. Maximum number of mothers giving birth to LBW babies were belonged to para 1st (31.70%) followed by para 4 and above (30.36%). 75.05% mothers were booked and 24.94% were unbooked. Majority of low birth weight babies (84.97%) were of normal delivery followed by LSCS (13.49%). 83.35% of LBW babies were delivered to Hindu mothers followed by 16.24% to Muslim mothers. More than 50% of mothers delivering LBW babies were belonging to grade -V i.e. lower socio-economic status (56.41%), followed by lower-middle (21.20%) and middle grade (14.87%). Maximum number of LBW babies belonged to mothers who were illiterate (41.81%) followed by mothers who were educated up to secondary level (27.93%). 84.08% LBW babies were delivered to mothers who were house wife, followed by 15.97% mothers were of working class. Only 10.18% of mothers were addicted of chewing

tobacco and in rest there was no history of any addiction. Maximum number of mothers in our study were not having any abortion (63.61%), followed by 20.10% mothers were having one abortion and 1.80% mothers having more than three abortions. Maximum number of mothers (68.76%) were not having any previous Low birth baby. 23.09% having one, 4.36 % two and 3.77% mothers were having more than three LBW babies in their previous pregnancies.

The main ante natal complications in mothers of low birth weight babies were pregnancy induced hypertension (PIH) (17.93%), followed by Ante Partum Hemorrhage (APH) (2.95%) and post-partum hemorrhage (PPH) in (1.41%) cases. Maximum number of mother's in our study were having anemia (23.72%), followed by chronic UTI (2.59%), and 1.61% of mothers having tuberculosis while RHD was present in 1.18% of mothers.

Birth	Matern	al age									
Weight	< 19 Yı	:s.	20-25 Yr	·s.	26-30 Y	rs.	31-35 Y	rs	>35 yr	<b>·s</b>	P Value
weight	n=292	<b>%</b>	n=1093	<b>%</b>	n=900	<b>%</b>	n=208	<b>%</b>	n=49	<b>%</b>	r value
0.5-1 Kg	16	5.47	18	1.64	14	1.55	12	5.76	14	28.57	P > 0.07
1-1.5 Kg	36	12.32	31	2.83	36	4.00	46	22.11	2	4.08	P < 0.01

14.55

79.88

Table 5: Relationship of maternal age with birth weight of LBW babies.

131

719

13.26

82.25

In weight group 0.5 to 1.0 Kg maximum no. of babies were seen with age of mothers >35 years (28.57%) followed by 30-35 years (5.76%) (P >0.07). In weight group 1-1.5 Kg and 1.5 to 2.0 Kg maximum number are

34.20

47.26

145

899

102

138

1.5-2.0 Kg

2.0-2.5 Kg

seen with maternal age 30-35 year (22.11%) and (43.26%) followed by <19 years (12.32%) (34.20%) respectively. (P<0.01) (P<0.001) respectively. In weight group 2.0-2.5 kg mother with age group 20-30 years had delivered these babies maximally. (P<0.05).

43.26

28.84

13

20

26.53

40.81

P < 0.001

P < 0.05

90-

60

Table 6: Relationship of maternal age to LGA/AGA/SGA babies.

VV/4 Com	Matern	al age									
Wt. for	< 19 Yrs.		20-25 Yr	20-25 Yrs.		26-30 Yrs.		31-35 Yrs		:s	P Value
gestational age	n=292	%	n=1093	%	n=900	%	n=208	%	n=49	<b>%</b>	
LGA	1	0.34	4	0.36	8	0.88	3	1.44	2	4.08	P > .08
AGA	106	36.30	449	41.07	308	34.22	35	16.82	18	36.73	P < 0.03
SGA	185	63.35	640	58.55	584	64.88	170	81.73	29	59.18	P < 0.05

Appropriate for gestational age babies were maximally seen with maternal age 20-25 years (41.07%) (P<0.03). While small for gestational babies were mainly seen with maternal age.

31-35 years (81.73%) followed by 25-30 years 64.88% and < 19 year (63.35%) respectively (P< 0.05). Comparison of birth weight with parity had shown that babies with IInd para had better birth weight as compare to primi para and multi para.

As the weight decrease the percentage of LBW babies were less in IInd para as compare to primi para and multi para (III and IV para).

P value in group 1.5kg-2.0kg and 2.0-2.5kg were statically significant. (P<0.04, P<0.01) and in weight group 0.5- 1.0Kg and 1-1.5 kg the P value is statically not

significant. P > 0.9 and (P > 0.11) respectively.

Table 7: Relationship of parity to birth weight of LBW babies.

	Parity								■ P Value
Birth Weight	Primi Para		2 <sup>nd</sup> Parit	2 <sup>nd</sup> Parity		ty	IVth and ab	r value	
	n=806	%	n=596	<b>%</b>	n=368	<b>%</b>	n=772	%	
0.5-1.00kg	22	2.72	18	3.03	16	4.34	18	2.33	P > 0.9
1 - 1.5 kg	38	4.71	22	3.69	43	11.68	48	6.21	P > 0.11
1.5- 2.0 Kg	159	19.72	64	10.73	66	17.93	192	24.87	P < 0.04
2.0-2.5 Kg	587	72.82	492	82.55	243	66.33	514	66.58	P < 0.01

Table No. 8: Relationship of LGA/AGA/SGA babies to the maternal parity.

I CAIACAISCA for cost	Parity	Parity									
LGA/AGA/SGA wt. for gest.	Ist	Ist		IInd		IIIrd		IV and above			
age	n=806	<b>%</b>	n= 596	<b>%</b>	n=368	%	n=772	<b>%</b>			
LGA	3	0.37	5	0.83	3	0.81	7	0.90	p > 0.18		
AGA	194	24.06	266	44.63	198	53.80	258	33.40	p < 0.03		
SGA	609	75.55	325	54.53	167	45.38	507	65.67	p < 0.03		

The number of SGA babies were highest in primi para (75.55%) followed by grand multipara (65.67%) (P <0.03). While number of AGA babies were more in IIIrd parity (53.80%) followed by IInd para (44.63%) (P<0.03). While in LGA babies there were no definitive correlation seen. (P > 0.18). Babies who were delivered

by LSCS mode had better birth weight than normal delivery (P<0.01). Hindu population had the better birth weight i.e. (78.66% LBW babies in weight group of 2-2.5 kg) as compare to Muslim population (39.95%) and as the weight decreased there was dominance of Muslim population i.e. 60.00% in weight group of 0.5 to 2.0 Kg and in Hindu population around (21.0%).

Table 9: Relationship of material socio-economic status to weight for gestational age of LBW babies.

	Soc	Socio economic status									
LGA/AGA/SGA babies wt. for gest. age	Grade I(69)			Grade II(122)		Grade III(378)		Grade IV(539)		le 34)	P Value
	n	%	n	<b>%</b>	n	<b>%</b>	n	<b>%</b>	n	<b>%</b>	
LGA	2	2.89	4	3.27	4	1.05	6	1.11	2	0.13	P > 0.9
AGA	42	60.86	64	52.45	214	56.61	203	37.66	526	36.68	P < 0.05
SGA	25	36.23	54	44.26	160	42.38	330	61.22	906	63.17	P<0.001

Table 10: Relationship of birth weight of LBW babies with complications of pregnancy.

	Complica	Complication of Pregnancy								
Birth weight of LBW babies	PIH		APH		PPH		P Value			
	n=456	%	n=75	<b>%</b>	n=36	%	P			
0.5-1 Kg	31	6.79	6	8.00	1	2.77	P > 0.9			
1-1.5 Kg	108	23.68	12	16.00	7	19.44	P > 0.07			
1.5-2.0 Kg	136	29.82	18	29.00	7	19.44	P < 0.04			
2.0-2.5 Kg	181	39.69	39	52.00	21	58.33	P 0.05			

Maximum No. of SGA babies were born to Mothers of grade V that is lower socio-economic status. (63.17%) P<0.001. (Kuppuswami scale). Followed by in grade IV

middle - lower socio-economic status. This is statically significant. Maximum number of babies of mothers of grade I, II, III socio economic status were belonging to AGA i.e. 60.86%, 52.45% and 56.61% respectively these

figures are statistically significant (P <0.05). In LGA babies there is no definitive trend is seen (P >0.09). Tobacco chewing in mothers were negatively correlated with birth weight of their babies. As in lower weight group 0.5-1.0Kg, 1-1.5kg and 1.5-2.0Kg more number of babies belonging to tobacco addicted mothers (8.49%),

(18.91%) and (41.31%) Vs non-tobacco chewing mothers (2.27%), (4.46%), and (16.38%) respectively. (P <0.05), (P<0.03) (P<0.01). According to this table maximum effects on birth weight was seen in mothers having PIH followed by APH and PPH.

Diadh	Medical illness during pregnancy													
Birth Weight	Anemia	ı	TB		Chronic UTI		RHD		Diabetes		Others		P	
weight	n=603	%	n=41	%	n=66	%	n=30	<b>%</b>	n=8	<b>%</b>	n=59	<b>%</b>	Value	
0.5-1 Kg	23	3.81	2	4.87	8	12.12	1	3.33	0	0	8	13.19	P>0.11	
1-1.5 Kg	82	13.59	7	17.07	4	6.06	12	40	0	0	16	27.11	P > 0.7	
1.5-2.0Kg	190	31.50	18	43.90	24	36.60	8	26.66	1	12.5	6	10.16	P<0.05	
2.0-2.5Kg	308	57.077	14	34.14	30	45.45	9	30	7	87.5	29	49.5	P<0.04	

Table 11: Relationship of birth weight with medical illness.

Mother's with major system illness had poor birth weight (Chronic, UTI, and RHD) as compare to minor illness. (Anemia).

#### **DISCUSSION**

Low birth weight is one of the most serious challenges for maternal and child health in both developed and developing countries. The purpose of this study was to find out the magnitude of the problem and to study the possible determinants of Low Birth Weight, in our Institute which caters Western Rajasthan.

Out of 8266 consecutive live birth babies' 2542 babies were low birth weight (as per WHO definition). The incidence of LBW babies in our study was 30.725%. According to United nation children fund New York 2004 the incidence of LBW babies were comparable to that of our study.10 In developing country i.e. like India incidence of LBW babies were 30%, Bangladesh 30%, Bhutan 15%, Maldives 22%, Myanmar 15%, Nepal 21%, Pakistan 19%, and Srilanka 22% in 2004. In comparison to developing country developed country had very low incidence of LBW babies for example, Thailand 9%, East Asia and Pacific 8% Sub-Saharan Africa 14%, Latin America 10%, United State 8%, Russia 6%, Globally 16% (2004). The increased incidence of LBW babies in developing countries are probably due to poor socioeconomic status, large population, illiteracy, poor educational states and other environmental factors are operating which are responsible for causing LBW babies. Various workers in India had found the incidence of low birth weight babies ranging from 25% to 35% which are comparable with present study. 11-13 If we further classify the LBW babies, we found that the incidence of VLBW babies was 2.72% in our study, Similar incidence of VLBW babies has been reported by various studies done in India i.e. Bhakoo et al 2.5%, Bhatia et al 2.6%, Sarna et al 2.9%, Singh M 3.4% comparable with present study. 14-17

The incidence of extreme LBW babies in our study was 0.89%. This incidence was almost Similar to study done by various workers i.e. 0.5% Amon E et al 0.42%, Finishtrom O et al 0.26%. 18,19 The male to female ratio was 1:1.9, being statically not significant. Gorav RB et al and Rafati S et al found similar male, female ratio in their study. 9,20 In our study maximum numbers of LBW babies were belonging to weight group 2-2.5 kg. (72.22%), followed by 1.5 to 2.0 kg (18.92%), 1- 1.5 kg. (5.94%) and 0.5-1 (2.91%). Our results were similar to study done by Joshi. H. S. and Subba SH et al in which they found 76% babies in weight group of 2.0-2.5 kg.<sup>21</sup> Report published by UMICEF/ICMR also showed 80% of LBW babies belonged to weight group 2.0-2.5 kg.<sup>10</sup> Shah in Rural Mumbai, Bhargava in Delhi, Ghosh and Bhargava in Urban slum Delhi. 13-15 A National collaborative study, and National neonatology forum: Multi centre data based study found similar finding in their study in different parts of India.4

According to gestational as wise 5.23% of babies were extreme preterm (i.e. less than 32 weeks) and more than 73.05% babies were term or near term. Villar and Belizan et al 22 in an analysis of data from 11 different regions in developed countries and 25 areas in developing countries stated that most of LBW babies were IUGR in developing countries where as in developed countries prematurity is the main cause for LBW babies.

In this study, maximum number of babies were of small for gestational age (SGA) 63.25% followed by Appropriate for gestational age (36.05%) and LGA babies were (0.70%). Similar finding was reported by Bhargava V. et al Gorav et al in their studies. 9.23 In present study, maximum number of mothers who delivers LBW babies were of age group of 20-25 years (42.99%), in weight group 2.0-2.5 Kg. maximum number of babies were delivered by mother aged 20-25 years (82.25) followed by 26-30 years (79.88%) (P<0.05, CHX 2 11.6), whereas in weight group 1.5 to 2.0 Kg. maximum number

of babies were delivered by mother aged 30-35 years (43.26%), followed by teen aged mothers (34.20%) and more than 35 years add mothers (26.53%) (P<0.001). In weight group 1.0-1.5 Kg. maximum number of babies were delivered in age group 30-35 years (22.11%), followed by teen aged mothers (12.32%), (P<0.01) and in weight group 0.5-1 Kg. maximum babies were delivered by mother aged more than 35 years (28.57%) followed by 30-35 years (5.76%) (P<0.7).

These figures have shown that teen aged pregnancy and maternal age more than 30 years had adverse effects on birth weight of babies. David and Lucile of Packard foundation noticed that maternal age less than 20 years and more than 30 years is a risk factor for occurrence of LBW babies. According to Washington state department of health, LBW babies born to mother less than 20 years of age and older than 34 years had a significant increased risk of delivering LBW babies as compare to women of 25-29 years. State of the sta

Verma V and Das KB et al in their study found that LBW babies is more common in teen age mother as compare to the older mothers. Amaximum SGA babies were delivered by mother aged 31-35 years (81.73) followed by teen aged mothers (63.35%) (P<0.05, CHX2 21.4), whereas in appropriate for gestational age (AGA) baby's maximum percentage of babies were seen in middle aged mother (75.92%) (P<0.03). No definitive trend is seen in LGA babies with maternal age, (P<0.8) which was statistically not significant. Our finding has shown that teenaged mothers and older mother (>35 years) had more SGA babies as compare to other age group. Srivastava A.K. et al in their study on IUGR babies found that 32% of IUGR babies were born to mother's age <20 years as compare to 26% in 20-29 years and 42% in >30 years.

Pregnancy outcome including birth weight and weight for gestational age are less favourable among adolescent and women over 30 years of age. It was found that the maximum mothers were primi para (31.70%), followed by forth para and above (30.36%), IInd Para (23.44%) and IIIrd Para 14.47% we have concluded that primi parity and multiparty have adverse effects on birth weight.

Bhargava et al found (38.5%) of LBW in primipara followed by 2nd para 45.5% and 3<sup>rd</sup> and above 16%.<sup>23</sup> Sainba et al reported various incidence of LBW babies as follows primi 34.7%, 2nd para 13.5%, 3<sup>rd</sup> Para 8.2%, 4<sup>th</sup> Para 16.2% and above and 5th and above 27.4% respectively.<sup>27</sup> Ghai OP et al found increase incidence of LBW babies in grand multipara particularity beyond 4th parity.<sup>28</sup> Mothers with IInd parity had better birth weight (82.55%) in weight group 2.0-2.5Kg, as compare to primi Para (72.82%) and grand multipart (66.58%) (P<0.01, CHX2 - 7.4) In weight group 1.5-2.0Kg. maximum babies were delivered by grand multipara mothers (24.87%) followed by primipara mothers (19.72%) (P<0.04). In weight group 0.5-1.0Kg and 1.0-1.5Kg there

were no definite Pattern seen. These figures were statistically insignificant (P<0.9, CHX2-6.2) and (P>0.11, CHX2-7.6) respectively.

Dhall K and Bugga et al in their study found that first born babies were significantly lighter in weight that IInd born babies after that the birth weight decrease in para 3,4 and 5th and above.<sup>29</sup>

Maximum SGA babies were delivered by primi para mother (75.55%) followed by multipara mothers (65.67%), IInd para, 54.53% and IIIrd para mother 45.38% (P<0.03). In appropriate for gestational age group maximum babies were belonging to IIIrd parity (53.80%) followed by IInd parity (44.63%), grand multipara (33.40%), and primi parity 24.06% (P<0.05 and CHX2 18.44). In large for gestational age babies there were no definitive trends seen and the figure was statistically not significant (P<0.18)

Saroj Saighal et al found maximum percentage of SGA babies born to primipara and Mukharjee and Sethna et al did not found any definite correlation regarding effect of parity on weight for gestational age and birth weight. 30,31 Pachuri and Marwah S.M. et al observed that parity has least important role in its effect upon birth weight and weight for gestational age.<sup>32</sup> 76.05% of mothers were booked in our study. 84.97% LBW babies were delivered normally, followed by LSCS (13.49%), forceps (0.5%) and others 1.02%. Hindu mothers had better birth weight as compare to Muslim Mothers. In weight group 1.5-2.0kg., 16.80% of LBW babies were from Hindu mothers where as 30.02% LBW babies from Muslim Mothers (CHX2-4.82) (P<0.01) P value of these group are statistically significant. In weight group 0.5-1 kg. and 1-1.5 kg, again there is predominance of LBW babies in Muslim population i.e. 9.92% Vs 1.46% and 20.09% Vs 3.11% respectively but difference between these were statistically not significant. In weight group of 2.0-2.5 kg., 78.66% of LBW babies were delivered by Hindu mothers as compare to 39.95% from of Muslim mothers (P<0.03) (CHX2=6.72), difference in these weight group are statistically significant.

Similar observations were made by Dhall K et al in their study.31 We observed that maximum numbers of LBW babies were belonging to lower socio-economic status. (56.41%) followed by lower-middle (21.20%), Middle (14.87%) Upper-middle (4.97%) and Upper class (2.71%) These finding was supported by various workers as all three factors taken in this scale (education of mother, occupation of father, and income of family) had their own effects on occurrence of low birth weight babies. Sainba et al reported 75% of LBW babies belonging to the lower socio-economic status.<sup>27</sup> Rafti S et al and Chia SE et al also found positive correlation with the LBW babies and lower socioeconomic status.<sup>20,33</sup>

Maximum numbers of SGA babies were born to mothers of grade V of Kuppuswami classification, followed by

grade IV (61.22%). P value was statistically significant (CHX2-8.97) (P<0.01). Study done by Udani PM et al found 25% babies of lower socioeconomic strata were under weight for age (SGA).<sup>34</sup> Srivastava AK et al observed higher incidence of S.F.D.<sup>19</sup> babies in mother who were belonging to lower socioeconomic status while Basarajappa et al did not found any significant correlation of birth weight and socioeconomic status.<sup>35</sup>

In present study, it was observed that as level of socioeconomic status improves, there was increase in the percentage of AGA babies but we found that there was less percentage of AGA babies in grade II as compare to grade III as there were less number of cases in grade II as compare to grade III of socio-economic status.

In a study from Kanpur found that as the economic status increases from lower class to middle class there was improvement in weight for gestational age.<sup>34</sup> Maximum number of mothers delivering LBW babies were illiterate (41.81%) followed by mothers educated up to secondary (27.93%), Primary educated (19.51%), graduate (10.62%) and post graduate 0.74% Better educational status of mothers imparts a better reproductive behaviour. Rafti S et al found in their study that as level of education increases, the chances of delivering LBW babies decreases.20 According to Washington state health department (2002) Infants born to women who had not completed high school had a significant higher number of LBW babies than infants born to mother with college education.<sup>25</sup> 84.08% mothers in our study were house wives, while 15.97% mothers were working mothers. Chia SE et al concluded that working mothers appears to be associated with a higher risk of having LBW babies.<sup>33</sup> This may be linked to their socio-economic status and possible work-related factors.

In present study 259 mothers (10.18%) were addicted to chewing of tobacco. When we compared birth weight with tobacco chewing we found that in weight group 0.5 to 1 kg, 1-1.5kg, and 1.5-2.0kg, in the mothers who were taking tobacco they were having higher percentage of LBW babies i.e. 8.49%, 18.01%, and 41.31% Vs in nontobacco chewing mothers 2.27%, 4.46% and 16.38% respectively. These values were statistically significant (P<0.05) (P<0.03), (P<0.01) respectively. In present study 20.10% mothers were having one abortion in their past pregnancy, followed by two abortions in 14.47% and three and more than three abortions in 1.80% of mothers. 23.76% of mothers were having one L.B.W. baby in their previous pregnancies, followed by two LBW babies in 4.36% and three or more than three LBW babies in 3.77% of mothers. Mallov MH et al evaluated the relationship of the birth weight of LBW babies and premature infants to previous occurrence of LBW babies among women who had two to five pregnancies.<sup>36</sup> Dunturd et al found that the familial incidence of LBW babies were due to tendency of having small for date babies in the families.<sup>37</sup> Complications of pregnancy seen in our study were PIH (17.93%) followed by APH (2.95%) and P.P.H. (1.14%) In weight group 2.0-2.5 Kg. maximum babies were seen in PPH mothers (58.33%) followed by APH (52.00%) and PIH 39.69% (P<0.05) But when we compare in lower weight group i.e. 1.5-2.0 Kg. we found that 29.82% babies were in PIH group followed by APH (29.0%) and PPH (19.44%) (P<0.04) In weight group 0.5-1.0 Kg. there was no definitive corelation seen. The maximum reduction in birth weight seen in PIH mothers may be because of its adverse effects on placental circulation. Among mother's medical illness contributing to birth of LBW babies in our study, anemia was found to be most common disorder (23.72%) followed by chronic UTI (2.59%), Tuberculosis (mainly pulmonary) (1.18%), Diabetes 0.31% and other illness (2.32%). Among other illnesses mothers were having CRF (0.27%), Asthma (0.35%), Hepatitis (0.59%) and febrile illness (0.55%)

Rafati S et al stated that Anemia was responsible for 13% of low birth weight babies they did not found any relationship between maternal diabetes and delivering of LBW neonate on the contrary diabetic mother give birth to heavier neonates.<sup>20</sup> In our study group mothers with major system illness had poor birth weight i.e. (RHD, UTI) as compare to minor illness like Anemia In weight group 2.0-2.5Kg, maximum percentages of babies were delivered by diabetic mothers followed by Anemia (57.07%) and chronic UTI (45.45%). In weight group 1.5-2.0 Kg. maximum babies were delivered by mothers having Tuberculosis (43.90%) followed by chronic UTI (36.60%) and Anemia (31.50%). In weight group 1.0-1.5 Kg. maximum babies were delivered by mothers having RHD (40%), followed by Anemia (13.59%). Thus, in present study it has been observed that RHD and Tuberculosis were responsible for causing maximum reduction in birth weight. These illnesses affect birth weight by their effects on maternal nutrition, their oxygen caring capacity, maternal general health, and effect on placental circulation.

# **CONCLUSION**

We recommend methods or strategy to reduce the incidence of LBW babies in the society. Parents and community at large must be educated and motivated to avoid early age of marriage and large family All efforts must be made at the level of individuals, parents, treating obstetrician and paediatricians, health care delivery system and country, to improve the biological outcome of each pregnancy. This will lead to improvement in overall quality of man power of our country.

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