BIRTH WEIGHT CO-RELATE TO MOTHER'S AGE AND PARITY : ONE YEAR URBAN HOSPITAL STUDY - KARNATAKA

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SUMMARY

The data of 1359 newly born babies in a Government Hospital (attached to Al-Ameen Medical College, Bijapur, Karnataka) were analysed during the period of one year from May 1991 to April 1992. Out of these, 16.8 percent were carrying the low birth weight (<2500 g). The average birth weight was 2,784 + 452 g. and co-efficient of variation was 16.4 percent. The sex-wise percentage distribution of male and female babies were 54 and 46 percent respectively. The data reveal that mortality rate was 22.3 percent among the low birth weight (LBW) babies.

INTRODUCTION

Birth weight is an important and reliable index which indicate foetal well being, maturity and outcome of pregnancy. It is considered as one of the determining factor for future survival of neonates. World Health Organisation (1977) has defined low birth weight (LBW), as baby weighing less than 2500g, within first hour of life. The etiology of this problem is not well understood. Many etiological factors, have been held responsible. Among those, socio-economic conditions and lack of health care as well as health education are found to be mainly responsible. Neonates in developing countries like India face the risk of mortality due to LBW. Infants in India with weight less than 2500 g. at birth represent about 30 percent of all live births and it is very high when compared to 4-5 percent in industrially developed countries (Terry et

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al 1987, Trivedi & Marlankar 1986). Schelp & Pongpaea (1985) have reported that low birth weight (LBW) infants run the risk of high mortality and morbidity than infants with normal birth weight. The goal of the National Health Policy is to reduce the incidence of LBW infants in the country to 10 percent by the year of 2000.

MATERIAL AND METHODS

The present study was undertaken in Goverement Civil Hospital which is attached to Al-Ameen Medical College, Bijapur, Karnataka. The data was collected from the hospital birth register and patients case sheet during the period of one year (May 1991 to April 1992). In that period a total of 1359 live births took place.

The various variables related to birth weight included in this study were parity, mother's age, religion family income, types of deliveries and sex of the babies etc. Statisticial techniques such as Mean, Standard, Deviation, co-efficient of variations, odd ratios and X2 test were used to analyse the relationship between various parameters.

RESULTS

A total of 1359 live birth cases were studied, of which 229 (16.6%) were low birth weight (LBW) babies. The mean birth weight was 2784 + 452 g. and co-efficient of variation was 16.4%. The sex wise ratio of male and female babies were 54 and 46 percent respectively. Mean birth weight of male babies was 2824 g. and female babies was 2735 g.

Table I shows the percentage distribution of parity with birth weight. 61.4% of the infants were of parity 1 and LBW rate was high in that parity (21.2%). The LBW rate was less for the parity 3 (5.5%) when compared to parity 2(11.6%), parity 4(10.0%) and parity 5(14.7%). The odd ratios indicates that parity 1 has 4.64 times and 2.42 times the risk of parity 3 and 4 of delivering the LBW babies. ($P<0.01$).

Table II shows mother's age related to birth weight. Of the total 14.7% mothers were of less than 20 years of age and LBW rate is high in that age group (23.1%) when compared to 20-29 years (16.8%), 30-34 years (10.3%) and 39 years and above of age (10.2%). Below 20 years of age mothers has 1.37 times (odd ratio) the risk to older mothers (> 20 years) of delivering the LBW babies ($P<0.05$).

Table III presents the family income distribution by birth weight. This northern part of Karnataka State is socio-economically and educationally backward. Majority of patients admitted in hospital for delivery belong to poor families and rural areas. The analysis of the data revealed that LBW rate declined with an increase of family income. Results show that an overwhelming majority of 1092 (80.4%) delivery cases have been recorded from the income group of below Rs.400/- per

Table 1
PERCENTAGE DISTRIBUTION OF PARITY WITH BIRTH WEIGHT

Birth Weight in gms.	PARITY 1	2	3	4	5	6	Total
< 1000	3 (0.4)	-	-	-	1 (5.9)	-	4
1000-1500	15 (1.8)	1 (0.4)	-	1 (1.7)	-	-	17
1500-2000	40 (4.8)	8 (2.8)	-	-	1 (5.9)	1 (5.9)	50
2000-2500	119 (14.3)	24 (8.4)	8 (5.5)	5 (8.3)	1 (5.9)	1 (5.9)	158
2500-3000	471 (56.5)	163 (57.2)	94 (64.4)	31 (51.7)	7 (41.2)	7 (41.2)	773
3000-3500	163 (19.5)	69 (24.2)	36 (24.7)	19 (31.7)	5 (29.4)	4 (23.5)	296
>3500	23 (2.7)	20 (7.0)	8 (5.4)	4 (6.6)	2 (11.7)	4 (23.5)	61
Total	834 (100)	285 (100)	146 (100)	60 (100)	17 (100)	17 (100)	1,359

X^2 = 29.46; df = 1; (P<0.01) (Significant)

Odd Ratios : Parity 1/parity2 = 2.06

Parity 1 / parity 3 = 4.64

Parity 1 / 4 2.42, Parity 1/5 = 1.26

Parity 1/6 = 2.02

month and LBW rate was high (17.9%) in that group when compared to income groups Rs.400-599, Rs600-799, and Rs.800 and above with LBW rates of 13.9%, 12.2% and 9.3% respectively (P>0.01).

Percentage distribution of mortality in relation to birth weight and religion is given in

Table II
DISTRIBUTION OF MOTHER'S AGE WITH BIRTH WEIGHT

Birth Weight in g	Mother's age in years <20	20-24	25-29	30-34	>35	Total
<1000	1 (0.5)	1 (0.2)	1 (0.2)	1 (0.8)	-	4
1000-1500	4 (2.0)	7 (1.4)	6 (1.3)	-	-	17
1500-2000	6 (3.0)	26 (5.0)	11 (2.4)	5 (3.7)	2 (3.4)	50
2000-2500	35 (17.6)	58 (11.2)	53 (11.8)	8 (6.0)	4 (6.8)	158
2500-3000	111 (55.8)	291 (56.2)	269 (59.8)	71 (53.4)	31 (52.5)	773
3000-3500	36 (18.1)	115 (22.2)	93 (20.7)	36 (27.1)	16 (27.1)	296
>3500	6 (3.0	20 (3.8)	17 (3.8)	12 (9.0)	6 (10.2)	61
Total	199 (100)	518 (100)	450 (100)	133 (100)	59 (100)	1,359

X^2 = 6.53 : df = 1; (P<0.05) (Significant)

Odd ratio : 1.37

Percentage in Paranthesis.

Table IV. Of the total 1359, cases, 83.9% and 16.1% babies were of Hindus and Muslims respectively. The percentage of LBW was slightly high among the Hindus (17.4%) than the Muslims (14.2%). The rate of mortality of LBW neonates for Hindus and Muslims were (20.7%) and (32.3%) respectively. The data revealed that babies having birth weight less than

Table III
DISTRIBUTION OF MORTALITY IN RELATION TO BIRTH WEIGHT & RELIGION

Birth weight in g.	Religion			Mortality		
	Hindu	Muslim	Total	Hindu	Muslim	Total
<1000	4	-	4	3	-	3
	(0.4)		(0.3)	(75.0)		(75.0)
1000-1500	16	1	17	6	-	6
	(1.4)	(0.5)	(1.3)	(37.5)		(35.3)
1500-2000	40	10	50	12	6	18
	(3.5)	(4.5)	(3.7)	(30.0)	(60.0)	(36.0)
2000-2500	138	20	158	20	4	24
	(12.1)	(9.1)	(11.6)	(14.5)	(20.0)	(15.2)
2500-3000	641	132	773	25	5	30
	(56.2)	(60.3)	(56.9)	(3.9)	(3.8)	(3.9)
3000-3500	256	40	296	4	-	4
	(22.5)	(18.3)	(21.7)	(1.6)		(1.4)
>3500	45	16	61	2	1	3
	(3.9)	(7.3)	(4.5)	(4.4)	(6.3)	(4.9)
Total	1,140	219	1,359	72	16	88
	(100)	(100)	(100)	(6.3)	(7.3)	(6.5)

X^2 = 1.61; df = 1; (P>0.01) (Not Significant)

Percentage in paranthesis.

2500 g. were more prone to mortality (22.3%) when compared to 3.9% and 2.0% for the group of 2500 to 3000 g. and 3000 g.and above respectively. The mortality declined with the increase in birth weight (P>0.01).

DISCUSSION

The LBW infants (16.8%) in the present study was less than that of other studies conducted at various places in India by different workers (Table V). Relative average birth weight is also shown in Table V.

The incidence of low birth weight (30%)

Table IV
FAMILY INCOME DISTRIBUTION BY BIRTH WEIGHT
MONTHLY FAMILY INCOME IN Rs.

Birth Weight G	200	200-399	400-599	600-799	800	Total
1000	1 (0.4)	3 (0.4)	-	-	-	4
1000-1500	3 (1.1)	12 (1.5)	2 (1.3)	-	-	17
1500-200	9 (3.3)	33 (4.0)	4 (2.7)	1 (2.4)	3 (4.0)	50
2000-2500	40 (14.7)	95 (11.6)	15 (9.9)	4 (9.8)	4 (5.3)	158
2500-3000	159 (58.2)	461 (56.3)	91 (60.3)	23 (56.1)	39 (52.0)	773
3000-3500	50 (18.3)	178 (21.7)	34 (22.5)	12 (29.3)	22 (29.3)	296
3500	11 (4.0)	37 (4.5)	5 (3.3)	1 (2.4)	7 (9.3)	61
Total	273 (100)	819 (100)	151 (100)	41 (100)	75 (100)	1359 -

X^2 = 1.35; (P>0.01) (Not significant)

Odd ratio : 1.67

Percentage in parenthesis.

in India is very high when compared to 4-5% of LBW rate in developed countries, (Terry et al 1987, Trivedi & Marlankar 1986). The Global estimation of the incidence of LBW is approximate 15.5%. In 1985, it was estimated that 129 million babies were born during one year and among them 20 million (15.5%) babies were of low birth weight. Nearly 50 percent of these LBW infants were born in the least developing countries , (WHO 1987). The rate of LBW neonates in India was higher than South East Asian countries like Phillipines (19.5%), Singapore (11.2%) Malaysia (9.0%) and Burma (20.0%) (Schelp and Pangpae 1985).

Table V
MEAN BIRTH WEIGHT AND INCIDENCE OF LOW BIRTH WEIGHT IN INDIA

S.No.	Author	Year	Place	Percentage of LBW.	Mean birth weight (g) +S.D.
1.	ICMR (1)	1990	Delhi	25.1	2769 + 545
2.	ICMR (1)	1990	Varanasi	30.6	2628 + 504
3.	ICMR (1)	1990	Calcutta	20.1	2673 + 394
4.	ICMR (1)	1990	Baroda	46.4	2449 + 520
5.	ICMR (1)	1990	Bombay	34.2	2597 + 441
6.	Kamaldoss (2)	1992	Madras	24.6	2720 + 440
7.	Mittal (3)	1976	Ludhiana	24.5	2974
8.	Murthy (4)	1989	AIIMS	-	2731 + 447
9.	Srinivas (5)	1976	Pondicherry	22.0	2625
10.	Surainder (6)	1970	Hyderabad	33.2	2710
11.	Tyadi (7)	1985	Wardha	29.9	-

The mean birth weitht in the present study was 2784 + 452 g. and was marginally high when compared to the recorded mean birth weight from different part of India (Table V) and it was lower than found in the studies conducted in Iraq and Pakistan reported by Ramamkutty et al (1983) and Nagra et al (1984) respectively. It is quite evident from the present study that birth weight of babies is dependent on mother's age, parity and socio-economic status of the family. The babies with LBW was 23.1% in the age group of less than 20 years and 15.9% in the 20 years and above age group (Table II).The incidence of LBW babies were high among the first para women

when compared to the subsequent parity (Table I). The similar trend is further strengthened by different worders Nagra et al (1984), Ramankutty et al (1983), Schelp (1985), Strahan (1984) and Surainder et al (1970).

The birth weight of the new born reflects the state of mother's age, parity, health, socio-economic level nutrition and antenatal care available. Low birth weight (<2500 g.) infants run the risk of high mortality than neonates with normal birth weight (Schelp & Pangpaw 1985). In the present study in 229 babies with low birth weight (<2500 g) mortality rate was 22.3% and in babies with normal birth weight (>2500 g) it was 3.3%. The rate is low when compared to studies conducted by Trivedi et al (1986).

From our study, we conclude that there are various parameters at interplay and it is difficult to find out any specific parameter influencing the birth weight. As the study results show that it is mostly the socio-economic status and maternal factors like parity and mother's age that contribute to high incidence of LBW. The findings clearly indicate the importance of age of mother at the time of first delivery which depends on age at marriage.

REFERENCES

1. *Nagra SA, Gilani AH, Ahmed MD, Haq Ev. J. Trop. Pedia. 30: 217, 1984.*
2. *Ramankutty P, Tikkreeti RAS, Rasam KW, Al-Thamery MD., Yacoob A.A.H., Mahmood D.A., J. Trop. Pedia. 29: 5, 1983.*
3. *Schelp FP, Pongpaew P. J. Trop, Pedia. 31: 4, 1985.*
4. *Strahan M. J. Trop. Pedia. 30:293, 1984.*
5. *Surainder YA, Prasad SK, Hymavanthy V. Indian Pedia. 7:388, 1970.*
6. *Terry PB, Condic RG, Bisenden JG, Kerridge DF, J. Br. Pedia. Assoc. 62:709, 1987.*
7. *Trivedi CR, Mavanlankan DV. Indian J. Pedia. 53:795, 1986.*
8. *WHO VII report on the world health situation, Vol-I 1987.*
9. *WHO, International Classification of Diseases, Vol-1, 1977.*