

NUTRITIONAL STATUS OF URBAN POOR MOTHERS AND BIRTH WEIGHT

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SUMMARY

A community based study was conducted in a resettlement colony of Delhi. 210 pregnant women in 3rd trimester were followed upto delivery to study influence of nutritional status of the mother in 3rd trimester on birth weight of the newborn. Low maternal height was observed to lead to higher risk of LBW babies and birth-weight of the newborns was more in taller mothers. Maternal haemoglobin level of less than 9 gm % was related with higher incidence of LBW. Birth weight of newborns was observed to rise about 100 gms, with every gm % rise in maternal haemoglobin. Proportion of babies with normal birth weight rises with rise in maternal weight gain in 3rd trimester. Pregnant women with poor weight gain in 3rd trimester delivered lighter babies. Intervention by means of Iron Folic acid supplementation and nutritional education is suggested to prevent LBW in urban poor.

INTRODUCTION :

The problem of Low Birth Weight (LBW) babies is widespread in the developing world. In India, 7 to 10 million children are born with low birth weight each year; that means atleast one-third of all children born (UNICEF 1987). Most of these children belong to rural and poor urban families. Half of all perinatal and one-third of all infant deaths are directly or indirectly related to LBW (Shah, 1986). Besides determining the risk of mortality, birth-weight commands growth and development of the child.

Data from a number of hospital studies show

that birth weight of new born is an important indicator of nutritional status of a mother. But hospital studies are not true representative of a community as large number of deliveries take place at home. Thus a community based study was undertaken in a slum cum resettlement area of Delhi to determine the relationship between nutritional status of the pregnant mothers of low-socio-economic status and birth-weight of the newborn.

MATERIAL AND METHODS :

The study was conducted in Kalyanpuri, a resettlement colony in East Delhi. The Urban Health Centre of Lady Hardinge Medical College is located in the area. All this women who had completed 28 weeks of pregnancy with

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expected date of delivery between September 1988 and April 1989 were studied. Thus a total of 210 women were included in the study. First contact was made as soon as possible after 28 weeks of pregnancy. At first contact, baseline data of the pregnant women were obtained through detailed history, physical, obstetric, anthropometric examination and basic investigations of the women.

Each subject was followed-up at four-weekly intervals and complete physical & obstetric examination was repeated at each visit. Gain in weight of the mother was computed by subtracting weight at 28 weeks from weight at 36 weeks of gestation. The parameters studied for nutritional status of the mother included height, weight gain during 3rd trimester (28-36 weeks of gestation) and haemoglobin level.

Out of 210 pregnant women included for the study, only 196 could be followed till delivery. Birth weight of the newborn was taken with a standardised lever balance within 48 hours of birth. New born was labelled as Low Birth

Weight (LBW), if it weighed less than 2500 gms.

OBSERVATIONS :

All the families belonged to low socioeconomic class (Kuppuswamy Class IV and V). 82% of the women had home deliveries.

MATERNAL HEIGHT AND BIRTH WEIGHT :

The proportion of newborns with normal birth weight was observed to rise with maternal height. About 70% of babies of women 160 cms. or more in height were of normal birth weight. Nearly half of the babies of 150-159 cms. tall women were of normal birth weight. But two-third of the newborns were LBW when maternal height was below 150 cms.

Mean birth weight was significantly higher in taller groups. As compared to babies of women below 150 cms., newborn were about 200 gms. heavier if height was between 150-159 cms. and about 350 gms. heavier if height was 160 cms. or more (Table 1).

TABLE - I
Birth Weight in relation to Maternal Height

Maternal Height (cm.)	No. of New-borns	Newborns with Birth weight				Birth Weight	
		> 2500 gm.		< 2500 gm.		Mean	SD
		No	%	No.	%		
< 150	35	12	34.28	23	65.72	2265.6	188.3
150 - 154	69	32	46.38	37	53.62	2450.7	252.4
155 - 159	61	34	55.74	27	44.26	2469.4	256.9
> 160	31	22	70.97	9	29.03	2610.8	267.7
Total	196	100	51.02	96	48.98	2448.1	236.4

Chi-square = 9.99, P < .025

Between Means : F = 54.4 P < 0.01

HAEMOGLOBIN AND BIRTH WEIGHT :

It was observed that two-third of the pregnant women were anaemic (Hb <10 gm%). Proportion of newborns with normal birth weight was observed to rise with rise in haemoglobin level of mother (Table 2). Nearly 70% and 80% of babies were of normal birth weight when maternal haemoglobin was 10-10.9 gm % and 11 gm % or above respectively. But as many as 60% of newborns were LBW at Hb levels of 8 to 8.9 gm% and more than 80% of babies were LBW at Hb level of less than 8 gm%.

Mean birth weight was observed to rise with haemoglobin of mother. With every gm% rise in Hb. level of mother, birth weight of babies was higher by approximately 100 gms. Babies of mothers with Hb level of 11 gm% and above were about 450 gms. heavier than those of mothers with haemoglobin level below 8 gm%. These

results were highly significant (Table 2).

WEIGHT GAIN AND BIRTH WEIGHT :

Complete recordings of weight gain and subsequently birth weight of newborn babies were made in 153 instances. It was observed that proportion of babies with normal birth weight rises with rise in maternal weight gain. All newborns were of normal birth weight when weight gain was above 3 mg. between 28 to 36 weeks of pregnancy. At maternal weight gain of 2-3 kg. about 80% of newborns were of normal birth weight. However, at a weight gain of 1-2 kg. more than half of newborns were LBW and if weight gain was upto 1 Kg., all newborns were LBW. With every Kg. rise in maternal weight gain, birth weight of newborns was higher by about 150 gms. These results were highly significant (Table 3).

TABLE - II

Birth Weight in relation to Maternal Haemoglobin

Maternal Height (cm.)	No. of New-borns	Newborns with Birth weight				Birth Weight	
		> 2500 gm.		< 2500 gm.		Mean	SD
		No	%	No.	%		
<8	38	6	15.798	32	84.21	2243.1	181.2
8 - 8.9	51	20	39.22	31	60.78	2363.0	216.7
9 - 9.9	41	26	63.41	15	36.39	2488.8	208.9
10 - 10.9	38	26	68.42	12	31.58	2537.6	150.7
11 +	28	22	78.57	6	21.43	2699.6	226.0
Total	196	100	51.02	96	48.98	2448.1	236.4

Chi-square = 37.34 P < .001

Between Means : F = 124.25 P < 0.01

TABLE - III

Birth Weight in relation to Gain in weight in III Trimester

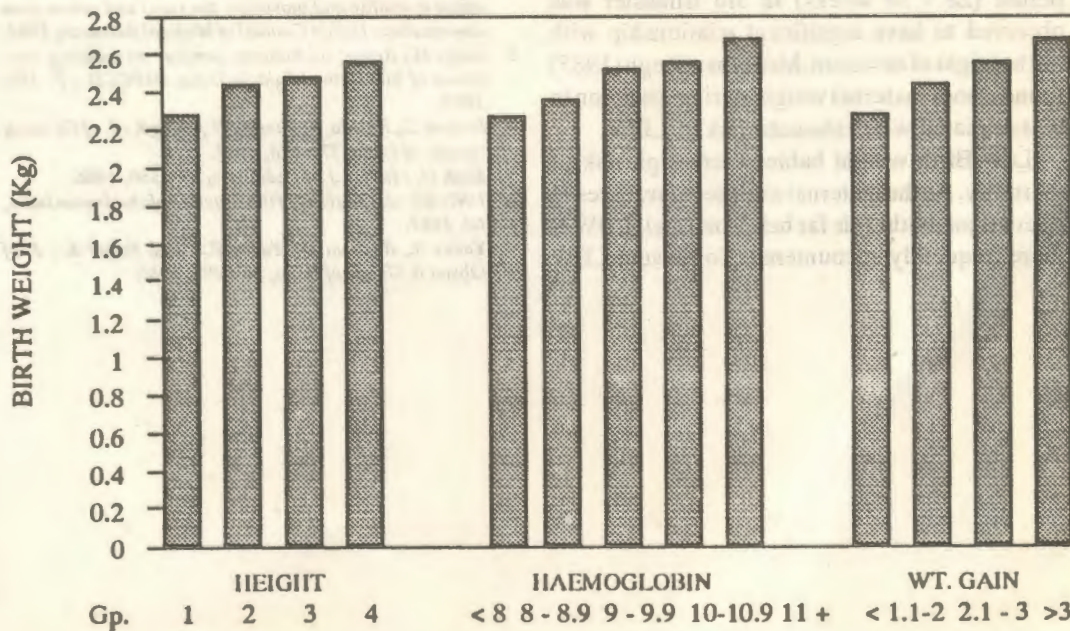
Gain in Weight (in Kg.) 28 to 36 weeks	No. of New-borns	Newborns with Birth weight				Birth Weight	
		> 2500 gm.		< 2500 gm.		Mean	SD
		No	%	No.	%		
Up to 1	24	0	0	24	100.0	2234.2	208.8
1.1 - 2	80	38	47.5	42	52.5	2429.9	2.9.6
2.1 - 3	32	26	81.2	6	18.7	2576.2	151.4
Above 3	17	17	100.0	0	0	2698.9	198.2
Total	153	81	52.94	72	47.06	2459.69	236.4

Chi-square = 53.35 P < .001

Fig. 1

BIRTH WEIGHT BY HEIGHT, Hb & Wt. GAIN

RESETTLEMENT POPULATION, DELHI



DISCUSSION :

Nutritional status of the mother is one of the most important factors affecting the outcome of pregnancy.

Yadav et. al (1986) observed low maternal height to be a risk factor for LBW though they had used different cut-off points. Our findings are in conformity with findings of other studies. A direct positive correlation was also revealed showing that in taller mothers, birth weight of the newborn was correspondingly higher.

Our observation was that maternal haemoglobin level of less than 9 gm% in third trimester causes a potential risk of LBW in the newborn. These findings were similar to those of Bachani (et al 1985). Shah (1986) and ICMR (1984). All had observed a haemoglobin level of less than 8% to be a risk factor for the foetus. Mean birth weight of newborns of anaemic mothers (Hb < 10 gm%) in the present study was 2.37 kg. and that of babies of non-anaemic mothers was 2.6 kg. Rathee et. al (1987) observed a mean birth weight of 2.2 kg in anaemic and 2.6 kg. in non-anaemic mothers.

Weight gained by the mother over 8 weeks period (28 - 36 weeks) in 3rd trimester was observed to have significant relationship with birth weight of newborn. Meharban Singh (1985) found a poor maternal weight during gestation to be associated with enhanced risk of LBW.

Low Birth weight babies carry high risk of mortality. As the maternal nutritional reserves of poor urban mothers is far below normal, LBW is more frequently encountered. To prevent LBW

in these deprived population groups, it is imperative that intervention should start before birth.

Iron-folic acid supplementation and nutritional education should be given to expectant mothers. Optimum intake of calories in 3rd trimester should also be ensured to the pregnant women. Nutritional neglect of the girls child is reflected in lower heights of adult women and this affects subsequent generations as revealed by the fact that LBW is more common in shorter women. This aspect should be highlighted through mass educational media. As most of the deliveries take place at home without proper antenatal care, a domiciliary-based action through trained birth attendants, Anganwadi workers and volunteers needs to be taken to ensure safe outcome of newborn, enhance survival and secure development of children.

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