

Anthropometry and Mode of Delivery of New Born Babies in Different Economic Groups and Its Impact on New Borns

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Introduction

Malnutrition is a widespread and major health problem in Bangladesh (1,2). Youngsters are one of the main victims of malnutrition, especially low birth weight babies (3,4,5). It is regarded that birth weight would be an index of the nutritional status of the community.

During gestation mother provides full biological environment for the foetus (6) and hence mother's nutritional status has a profound effect on birth weight (7,8). Mother's nutritional status is usually influenced by the economic condition of the family (9).

In this study an attempt was made to study the anthropometry of the new born babies and its relationship with the family income of the mother. The specific objectives are:

- 1) to investigate birth weight, birth-length and head circumference of the new borns.
- 2) to record the mode of delivery.
- 3) to study the relationship between birth weight and family income of the mother.

Materials and methods

The study was carried out in the Department of Gynaecology and Obstetrics of Sir Salimullah Medical College Hospital between January and December, 1990.

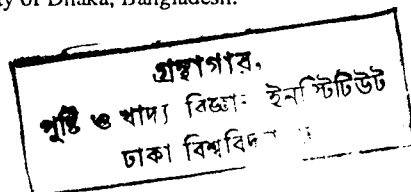
Sample :

The pregnant mothers who attended the Gynaecology Department within the study period were included in the study. Their mode of delivery and monthly income were recorded. A sample of 621 mothers and their children was taken.

Anthropometry :

After delivery the birth-weight, birth length and head circumference of 621 new born babies were recorded. The born handicapped babies were excluded from the study.

The measurements of all babies were done one hour after delivery. The mean of three measurements for each of them was used. The birth weight was measured by placing the nude baby on a detecto baby scale with the nearest 1 gram. An infantometer was used for crown-heel length of the babies



with the nearest 0.1 centimeter. The length was measured by legs completely stretched applying moderate pressure on the knees and by closing the leg slid to touch the heels.

The measurement of the head circumference was done by a plastic tape passed around the head. The largest circumference of the head was taken for the measurement levelled by the superciliary margins in front, parietal eminence laterally and occipital protuberance behind.

Income Status :

The family monthly income was estimated by direct interrogation to baby's parents. The following criteria for the low, middle and high income group of mothers was used.

Income Group	MonthlyIncome (Tk)
Low	below 2,500/=
Middle	2,500—5,000/=
High	above 5,000/=

Results

Birth weight :

Fig: 1 (Annexure-1) Shows the percentage distribution of birth weight of the new borns. The birth rate ranged from 900 gm. to 4000 gm. About 44% babies were underweight with the same proportion for male and female babies. Two-thirds of the babies (65%) were within 2000 to 3000 gm weight range and 40% of them had weight between 2500 and 3000 gm. The mean birth weight of male babies was 2505.7 ± 582.5 gm. and that of female babies was 2508 ± 560 gm. with the total mean of 2506.8 ± 571 gm.

Birth length :

Table-1 shows the birth length of the babies. The birth length ranged between 35 cm and 51 cm. About 56% of babies were within 43 to 47 cm range and 57% were above 45 cm. The mean length for male babies was 44.9 ± 3.3 cm. and that for female babies was 45.0 ± 3.0 cm with a total mean of 44.99 ± 3.15 cm.

Head circumference :

Table-2 Shows head circumference of the new born babies. About 85% babies were within 29 to 35 cm range. Nearly 50% of them were between 33 and 35 cm. The mean head circumference of male babies was 32.7 ± 2.45 cm and that of female babies was 32.8 ± 2.2 .

Mode of Delivery :

New born babies were also classified according to the mode of delivery (Fig:2, Annexure-2). More than 80% were normally delivered while only 0.8% of them were delivered by forcep. About 55% mother of female babies underwent a ceasarian operation compared to 45% mothers of male babies.

Income status :

Table 3 present the distribution of parents of new born by family income. About 50% of the parents had low income. About 54% parents of female babies had low income compared to 46% of parents of male babies. There exists a positive correlation between birth weight and family income at 1% level of significance ($\chi^2 = 19.63$ df 5).

As family income increases the birth weight also increases (Table 4).

Table-1 Distribution of the Newborns by birth length.

Birth length (cm)	Male	Female	Total	%
35 - 37	12	5	17	2.74
37 - 39	2	3	5	0.81
39 -41	35	38	73	11.75
41- 43	16	8	24	3.87
43-45	65	79	144	23.19
45-47	99	109	208	32.85
47-49	55	43	98	15.78
49-51	23	29	52	8.37
Total	307	314	621	100

Table-2: Distribution of the new borns by head circumference.

Head circumference (cm)	Male	Female	Total	%
25-27	11	2	13	2.1
27-29	7	9	16	2.6
29-31	73	80	153	24.6
31-33	31	37	68	10.9
33-35	150	154	304	48.9
35-37	30	28	58	9.4
37-39	5	4	9	1.5
Total	307	314	621	100

Table-3 : Distribution of parents of new borns by family income.

Income level	Male	Female	Total	%
Low	144	170	314	50.6
Medium	161	137	298	47.9
High	2	7	9	1.5
Total	307	314	621	100

Table-4* Distribution of the new borns by birth weight and income level of their parents.

Income Level	Low	Medium	Total
Birth weight (gm)			
500 - 1000	2	1	3
1000 -1500	18	5	23
1500 - 2000	57	38	95
2000 - 2500	79	75	154
2500 - 3000	117	129	246
3000 - 3500	36	41	77
3500 - 4000	5	18	23
Total	314	307	621

* For chi-square test first 2 classes have been added to justify validation.

Discussion

It was found that the mean birth weight of the babies was 2506.8 gm \pm 571 gm with the male and female babies of 2505.7 \pm 582.5 gm and 2508—560 gm respectively. It revealed that the average birth weight of female babies increases to about 10% compared to the findings of Khan et al⁽¹⁰⁾ (2281 \pm 411 gm) which differs significantly ($t=7.18$, $P<0.05$). However, the mean birth weight of male babies remained static. The birth weight of our babies are closer to that of India, where different workers recorded birth weight ranging between 2494 and 2850 gm⁽¹¹⁾. Compared to other countries, the mean birth weight of our new borns are always lower. As for example, the average birth weights of USA (California) were 3400 gm (male) and 3300 gm (female); Switzerland were 3500 gm (male) and 2925

Fig -1 Diagram Showing percentage distribution of the New borns by birth weight.

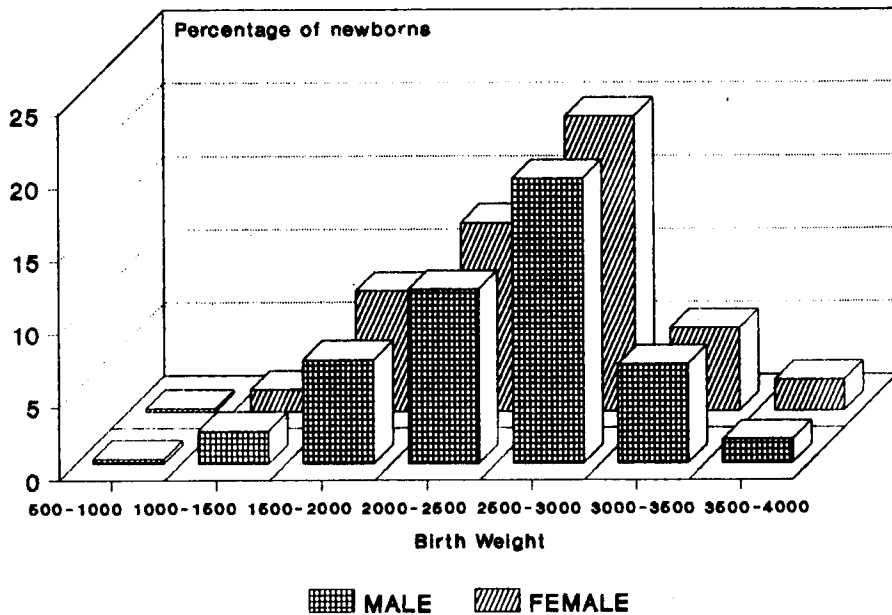
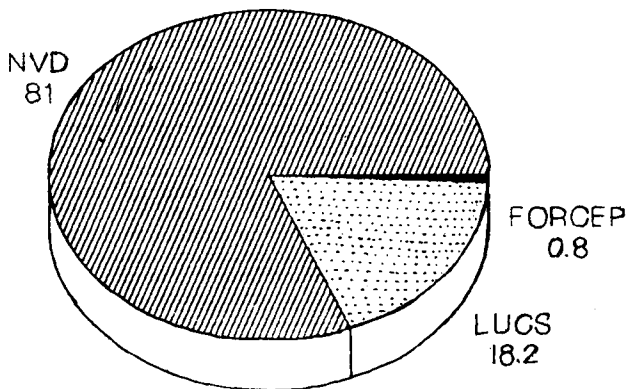


Fig:2 Diagram showing the percentage distribution of New borns by mode of delivery.



- NVD = Normal Vaginal delivery
- LUCS = Lower Uterine Ceasarian section

gm (female) and that of Indonesia were 2990 gm (male) and 2925 gm (female) (12,13).

Birth weight might be an indicator for the present as well as for future nutritional status of the community. In this study, 44% of the new borns were underweight. It was only 36% in 1978 (10). This indicates that the nutritional status of the country did not improve over 12 years period. The national nutrition surveys also revealed the distressing trend. Acute malnutrition (wasting) among 5-8 year aged children became double in 1981-82 compared to 1975-76.

Regarding crown-heel length of the new borns, it was observed that the mean length (45 cm) fall to about 2 cm in both male and female babies, compared to that of the findings of Khan et al (10). The average length was also lower than many countries even that of India (48.5 cm) and Indonesia (47 cm) (13). This also indicates an alarming situation of the nutrition among children.

The mean head circumference of our new born babies were 32.7 cm for males and 32.8 cm. for female. The same kind of findings were also recorded by Khan et al (10) in Bangladesh and Kalra et al (14) in Jamaican (33.9 cm) and Indian babies (33.6 cm).

Cesarian section for delivery increases in Bangladesh (16). It has multiple causative factors. However it may be due to the improper nutritional status of the mothers which often results low birth weight babies.

Mother's nutritional status is influenced by the socio-economic conditions of the

family(9). In our study there exists a direct relationship between family income and birth weight. Poor economic condition of the family results maternal malnutrition which in turn gives birth to more low birth weight babies. It is of gneral agreement that low birth weight causing high mortality among youngsters. In Bangladesh infant mortality is still very high (100/1000 livebirth) (15) compared to other countries.

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Annexure: 1

Percentage Distribution of the Newborns by Birth weight.

Birth weight (gm)	Male	Female	Total
500-1000	0.32	0.16	0.48
1000-1500	2.25	1.45	3.70
1500-2000	7.09	8.21	15.30
2000-2500	11.92	12.88	24.80
2500-3000	19.48	20.13	39.61
3000-3500	6.76	5.64	12.40
3500-4000	1.62	2.09	3.71
Total	49.44	50.56	100.00

Annexure: 2

Percentage Distribution of new borns by mode of delivery.

Mode of delivery	*Male	Female	Total
NVD	40.75	40.26	81.01
LUCS	8.21	9.98	18.19
FORCEP	0.48	0.32	0.80
Total	49.44	50.56	100.00

* NVD = Normal vaginal Delivery

LUCS = Lower Uterine Ceasarin Section.