

Original article

Growth Pattern of Exclusively Breastfed Babies in Urban Affluent of Bangladesh

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Abstract

Objective: To find out the growth in the exclusively breastfed babies of the affluent mothers and to compare the figures with those of the children in the industrialized countries. **Methods and materials:** Fifty-three babies were selected in 1 year time period for this cross-sectional study under 6-month of age with prefixed criteria, such as exclusively breastfed and not fed with any formula feeding. Recommended schedule of immunization (EPI) was followed to weigh and measure for supine length. Data were analyzed in PC through SPSS and some calculations were done in calculator too. **Place and time of work:** Data were collected from August 2011 to June 2012 in the Pediatrics Department of Bangladesh Medical College Hospital and the Researcher's Chamber at Dhanmondi, Dhaka. **Results:** The data of developed countries showed that in first 3-month of age, children grow in weight 30 gm/day and in length 3.5 cm/month, followed by weight gain of 20 gm/day and linear growth 2 cm/month in next 3-6 months. Our babies could be compared to those figures, with 33.54 gm/day in the weight gain and 4.17 cm/month in linear growth in the first 3 months. The average weight gain during the next 3 months (3-6 months of age) was 22.3 gm/d and linear growth for this period was 2.12 cm/month. **Conclusion:** Babies of our country in well-off families can grow optimally in comparison to the growth of the babies in the industrialized countries, or even can exceed, if they are exclusively breastfed and brought up ensuring immunization and follow up in educated mothers.

Keywords: affluent family; weight gain; linear growth; exclusively breastfed baby; exclusive breast feeding

DOI: <http://dx.doi.org/10.3329/bjms.v13i4.20627>

Bangladesh Journal of Medical Science Vol. 13 No. 04 October '14. Page: 466-469

Introduction:

The standard text books and references indicated that a newborn's weight may decrease by 10% of birth weight in the first week as a result of excretion of excess extra vascular fluid and poor intakeⁱ. Infants regain or exceed birth weight by 2 weeks of age and should grow at a rate of approximately 30 gm/day in the first 3-month of age and 20 gm/day in the next 3-6 months in the developed countriesⁱⁱ. Also the recommended growth in supine length 3.5 cm a month in the first 3 months of age and 2 cm a month in the next 3-6 months.

These references were traditionally based on the Western world and their standardsⁱⁱⁱ. It is a common thinking that developing worlds are lag behind than

the developed world and conng all milestones of life, we are behind them.

The babies under this study were exclusively breastfed and stayed healthy. They visited the consultant monthly for immunization and occasionally for minor complaints, such as cold, cough and/or diarrhea with no dehydration.

Materials and Method:

This cross-sectional study considered a sample of 53 babies under 6-month of age in an 12-month time frame from August 2011 to July 2012, from Bangladesh Medical College Hospital's Pediatrics Department and the Principal researcher's "Chamber" in Dhanmondi, Dhaka, where applicable. Each baby with the prefixed criteria, such as exclusively breastfed, proven records of previous

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visit(s) and not fed with any formula were selected. No mothers were advised to come at any prescribed intervals; rather the recommended schedule of immunization (EPI) was followed. Each baby weighed and measured for supine length using standard pediatric scales. Qualified doctors, who were sufficiently trained in pediatric maneuvers, did all procedures methodically. Data were analyzed in PC through SPSS and some calculations were done in calculator too.

Results and Discussion:

Just above three-fourths of the babies belonged to the upper socioeconomic class (77.36%), because of the purposive sample selection of the respondents being mostly from the affluent class. All the mothers were educated (100%). Almost all of them (98.9%) were firmly determined to breastfeed their babies exclusively (99.34%). They properly followed (99.2%) the immunization schedule too.

The average birth weight was 3080 gm. This figure is a bit higher than the Japanese national figure of 3029 gm^{iv} In this Japanese national figure, an incidence of low birth weight of 11.3% was recorded, whereas in our study, we found this as 17%. Our figure is very similar to the national figure for Malaysia (17.3%) against her average birth weight of 3057gm, which might be considered as significant^v.

Table-1: Some selected profiles of the sample distributed by different criteria

Gender Distribution	Male 28 (52.80%)	Female 25 (47.20%)	Total 53 (100%)
Socioeconomic Class	Upper 51 (96.23%)	Middle 2 (3.17%)	Low 0 (0%) Total 53 (100%)
Maturation by Term	Full 49 (92.45%)	Pre 2 (3.77%)	Post 2 (3.77%) Total 53 (100%)
Birth Weight	Highest 4550 gm	Lowest 2150 gm	Average 3080 gm

- Socio-economic “middle” class was 2; assumed as negligible.

The total number of low birth weight (LBW) babies in this study was 9 (17%). It is about one-third of the national figure for Bangladesh, which is 40%^{vi}. This difference can be explained by the fact that these mothers were only from the wealthy families (99.6%), sufficiently educated and went under regular antenatal care (93.3%) by qualified obstetricians. Only 5 (9.43%) babies had a birth weight 4 kg or more. The highest birth weight recoded was 4550 gm. It is said that largest live born baby ever weighed 9299 gm with a length of 58 cm^{vii}.

About one-third babies (N=17; 32.1%) had a birth weight range of 3 to 3.5 kg. This is the standard birth weight best for survival^{viii}. The study found average linear growth in first 3-month was 4.17 cm/month (Table-2) followed by 2.35 cm/month in 3-6 months by standard pediatric scale. The male-female ratio was 1.12: 1.00. The reason behind this difference is not clear. As the difference in the proportion was not very big so that it might be considered insignificant^{ix}.

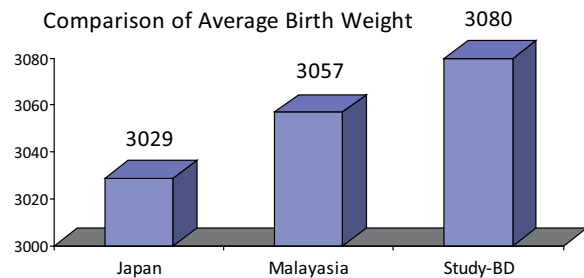


Figure-1: Comparison of birth-weight among Japan, Malaysia and this study

The average weight gain of the 53 babies in first 3-month was 33.54 gm/day and the average weight gain for the whole 6-month was 28 gm/day. It is almost corresponding to the average weight gain in the western healthy babies.^x

Highest weight gain was recorded as of 46.67 gm/day in this study at the age of 93 days. Following table (Table-3) shows 27 babies growth pattern by height. These 27 babies aged 3-6 months, grown 2.35 cm/month, on average.

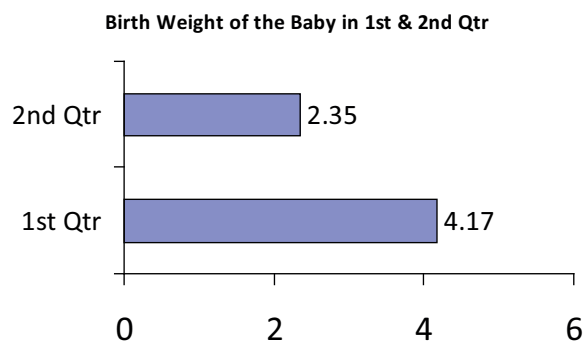


Figure-2: Birth-weight in first and second quarter

Table-2: Linear Growth in First 3-month (In between 10~90 days)

Sample #	1 st Visit	Last Visit	1 st height	Last height	Height-Diff	Day-Diff	Growth/D	Growth/M	Total
4	13	42	47.5	52.0	.160	29.00	4.50	.1552	4.66
5	18	59	54.0	60.0	.329	41.00	6.00	.1463	4.39
6	13	21	50.0	50.5	.125	8.00	.50	.0625	1.88
7	14	32	50.0	53.5	.194	18.00	3.50	.1944	5.83
8	14	50	55.0	61.0	.167	36.00	6.00	.1667	5.00
9	19	79	52.5	62.0	.158	60.00	9.50	.1583	4.75
12	49	58	54.5	56.0	.167	9.00	1.50	.1667	5.00
14	19	85	50.0	58.0	.121	66.00	8.00	.1212	3.64
17	30	59	53.0	54.0	.034	29.00	1.00	.0345	1.03
18	15	66	35.5	42.0	.127	51.00	6.50	.1275	3.82
20	16	89	49.5	59.5	.137	73.00	10.00	.1370	4.11
22	20	87	54.5	64.0	.142	67.00	9.50	.1418	4.25
23	18	67	52.0	59.0	.143	49.00	7.00	.1429	4.29
25	25	72	59.0	65.0	.128	47.00	6.00	.1277	3.83
26	18	73	54.0	62.5	.160	55.00	8.50	.1545	4.64
27	16	74	55.5	65.0	.164	58.00	9.50	.1638	4.91
28	17	73	46.0	54.5	.152	56.00	8.50	.1518	4.55
29	14	73	52.5	61.0	.144	59.00	8.50	.1441	4.32
30	16	76	51.0	61.0	.167	60.00	10.00	.1667	5.00
31	25	87	53.0	60.0	.113	62.00	7.00	.1129	3.39
33	26	69	52.5	57.5	.116	43.00	5.00	.1163	3.49
34	46	77	54.5	59.0	.145	31.00	4.50	.1452	4.35
35	11	63	48.0	57.0	.173	52.00	9.00	.1731	5.19
36	25	90	45.0	57.0	.185	65.00	12.00	.1846	5.54
37	36	90	54.5	64.0	.176	54.00	9.50	.1759	5.28
38	41	85	52.5	58.0	.125	44.00	5.50	.1250	3.75
39	20	90	48.0	60.0	.171	70.00	12.00	.1714	5.14
41	15	88	53.0	61.0	.110	73.00	8.00	.1096	3.29
43	37	81	50.0	56.0	.137	44.00	6.00	.1364	4.09
47	15	73	51.0	56.5	.100	58.00	5.50	.0948	2.84
48	40	73	56.0	60.0	.121	33.00	4.00	.1212	3.64
49	18	72	52.0	59.0	.130	54.00	7.00	.1296	3.89
50	21	87	54.0	61.5	.114	66.00	7.50	.1136	3.41
51	12	90	50.0	57.0	.090	78.00	7.00	.0897	2.69
52	44	78	56.0	61.0	.147	34.00	5.00	.1471	4.41
53	44	67	56.5	61.0	.137	23.00	4.50	.1957	5.87

Average = 4.17 cm/month

Table-3: Linear Growth in 3-6 months (In between 91~180 days)

Sl.	Sample #	Growth (increased)	Sl.	Sample #	Growth (increased)
1	4	0.133	14	33	0.027
2	5	0.059	15	34	0.074
3	6	0.093	16	35	0.075
4	13	0.167	17	36	0.048
5	18	0.125	18	37	0.086
6	20	0.089	19	38	0.063
7	22	0.016	20	39	0.047
8	25	0.071	21	41	0.068
9	26	0.056	22	43	0.161
10	27	0.09	23	47	0.096
11	28	0.06	24	49	0.063
12	30	0.123	25	50	0.039
13	31	0.081	26	51	0.054
			27	53	0.051

Linear Growth=2.35 cm/month

Conclusion:

Birth weight and growth for our babies born to the mothers with good health and education in Dhaka were similar to that of the babies of the industrialized countries. Though the number of babies in this study was not very large, but the number of their visits to the pediatrician was sufficient (N=239; average 4.51 visit/baby). The visits mostly were made for follow up and immunization rather than illness. The babies were exclusively breastfed and stayed healthy. This study showed that exclusive breast-

feeding can ensure optimum growth in infants even in the developing country and can protect the children from infections in early infancy (sickness rate was 4.37% only). This study also proves that healthy and educated mothers with economic affordability can give birth to babies with standard anthropometry. This study confers that improving the socioeconomic and educational standard of mothers, health status of their infants, by height and weight, can be ensured.

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