



## The Growth Pattern of Infants (0 - 12 Months) in a Rural Area of Rivers State, Nigeria

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**ABSTRACT:** The growth pattern of two hundred and fifty infants attending the University of Port Harcourt, Primary Health Care Centre, Aluu was studied. Infant's aged 0 - 4 months had a growth curve similar to that of National Centre for Health Statistics 50<sup>th</sup> centile standard. After this age, the growth pattern fell below the 50th centile of the aforementioned standard. The decline in growth was more pronounced during the weaning period. Most of the infants were found to be short in height. @JASEM

Growth is one of the characteristics, which distinguishes living things from non-living things. There is a close relationship between the ability to grow and the availability of protein and energy (Ye Guang-Jun, 1995). In children and infants the quantity and quality of food affects the pattern of growth. Changes in the pattern of growth are of prime interest to nutritionists and Health workers. As such, changes could indicate one of several things: the availability or non-availability of food; the presence or absence of disease; the hygiene condition of the environment; and the feeding pattern of the infants.

Basically, growth is the physical state of the body resulting from the intake of nutrients, upon which some other factors are super-imposed (Ye Guang-Jun, 1995). Of concern to health workers when growth is compromised, is the development of a poor mental state, which could lead to poor behavior besides the development of a weak immune system (LaChance, 1995).

Children in the rural areas of the developing world are often confronted with the problem of malnutrition. Akaniwor *et al* (1991) reported on the profile of protein energy malnutrition among urban pre-school children in Rivers State. While Ogunranti (1987), reported on the growth pattern of children of middle class families and peasant families in Choba community, Port Harcourt.

Little information is available on the growth pattern of infants in the rural parts of Rivers State. The current study was carried out in order to find out the growth pattern of infants in the rural setting of Rivers State, Aluu that served as a case study.

### MATERIALS AND METHODS

The growth profile of two hundred and fifty infants (0 - 12 months) attending the University of Port Harcourt Health Care Center was studied. Sampling was by a random method. Structured questionnaires were distributed to the mothers of the infants. The questionnaire contained information on the educational level of the parents with their occupation and their level of income. The data also contained information on the weaning patterns of the infants, and the rate at which infections occurred.

Anthropometrical measurements of weights and heights were carried out. The weight was measured to the nearest 10g, using a spring balance. The supine length (height) was measured using a calibrated tape and an examining table. The anthropometric estimates were subsequently analyzed.

### RESULTS AND DISCUSSION

Fifty-five percent of the infants studied were females, while forty-five percent were males. The anthropometric measurements of the male and female infants are presented in Table I. The growth curves of these infants were shown in Figures I - IV. The weights and heights of the children were compared with the NCHS (1977) 50th centile standard. In Fig. 1, the growth of the infants (combined sexes), 4 - 12 months old, fell below the 50th centile of NCHS (1977) reference standard. Children aged 0 - 4 months of age had similar weights to the reference standard. There was a decline in weight between ages 6 - 12 months. The decline in weight was more pronounced between 6 and 10 months. Fig. 2 shows the weight for ages of separate sexes. The growth curve of the female infants was above that of the male (Ca 50%) with regards to the weight of the infants.

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TABLE 1: Mean percentage Weight-for-age of infants aged 0 - 12 months

Age group (Months)	Percentage of infants studied.	Mean (%) weight for age		
		Female	Male	Both sexes
0 - 4	156 (65%)	91.8 ± 5.6	98.8 ± 3.6	96.0 ± 4.5
5 - 8	57 (24%)	94.8 ± 2.8	87.8 ± 2.1	92.5 ± 2.3
5 - 12	27 (11%)	93.5 ± 1.6	89.3 ± 3.2	92.5 ± 5.6
	240	(• ) 93.4	(• ) 92.0	(• ) 93.7

(Key (•) = mean).

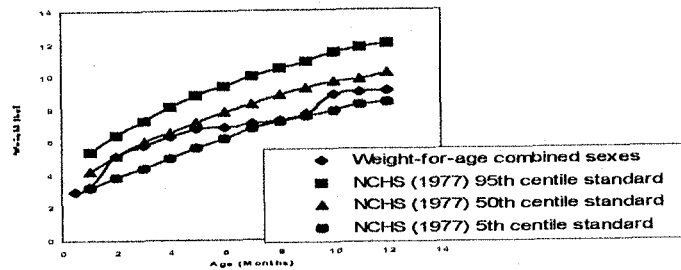


Fig. 1: Weight-for-age infant growth curve obtained from rural area of Port Harcourt (Combined sexes)

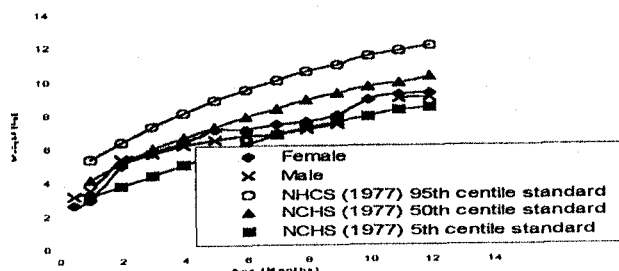


Fig. 2: Weight-for-age infant growth curves obtained from rural area of Port Harcourt (Separated sexes)

Fig. 3 shows the growth pattern of the combined sexes (height for age). Fig. 4 shows the height for ages for the separate sexes. According to Fig. 3, the growth pattern of the combined sexes ran below the 50th centile of the NCHS (1977) growth standard, and the drop was more marked between the ages of 5 and 9 months. With regard to the

separate sexes, there was no significant difference. Furthermore analysis of the anthropometric data was carried out based on Gomez *et al* (1956) classification (Table 2). This classification showed 70% of the infants being normal; 24.2% having mild protein-energy malnutrition (PEM); 5.4% having moderate PEM and 0.4% having severe PEM.

TABLE 2: Classification of protein energy malnutrition based on Gomez *et al* (1956)

PEM grade	Frequency			% Population
	Male	Female	Total	
> 90% (no PEM)	75	93	168	70.0
75 - 90% (mild PEM)	28	30	58	24.2
60 - 75% (moderate PEM)	6	7	13	5.4
< 60% (severe PEM)	-	1	1	0.4
	109	131	240	100

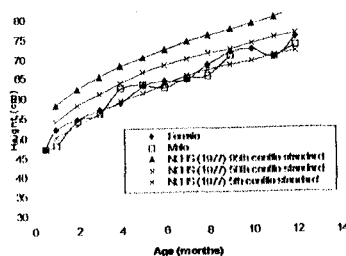


Fig. 3: Height-for-age infant growth curves obtained from rural area of Rajasthan (Chaperai sector)

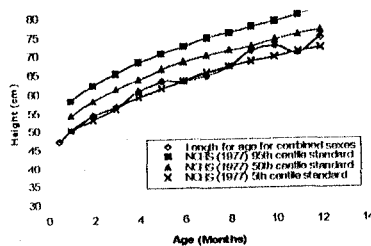


Fig. 4: Height for age for combined sexes

Using Waterlow's (1972) classification (Table 3), 19.6% of the infants were stunted and wasted. 5% had a normal nutritional status but stunted. 9.6% had acute malnutrition. They were not stunted, but wasted. 59.6% not stunted and not wasted (normal). There is a fairly good agreement between Gomez's (1956) classification and Waterlow's classification. From the result of the growth curves when compared with the 50th centile of the NCHS standard curve, the infants were malnourished. This is in agreement with Gomez *et al* (1956) and Waterlow and Read (1972) classification, which showed about 30% of the children to be malnourished.

The marked drop in growth (wt. for age) between 4 and 10 months of age could be due to poor weaning practices among these infants by parents. It is a well-known fact from nutritional studies, that the weaning period is a period in which breast milk is insufficient and the infant would require supplementary foods. Report has indicated that where weaning practice is poor, infants have been observed to suffer from malnutrition (Vella *et al*, 1995).

The growth curve of the female infants that was found to be above that of the male infants could be

due to the presence of inactive fat in the female infants.

The height of all the infants fell below the 50th centile of the aforementioned standard. The observation made in which the infants were found to be short when the weights of the infant were adequate could be due to the fact that the infants come from a race that is genetically short. This study agrees with that of Vella *et al* (1995) where nutrition situation was found to be satisfactory below six months of age and deteriorating in the second half of the first year and beyond. The weaning period is a period when problems of infection and insufficient nutrient intake limit growth.

The diarrhea cases represented in some of the infants could be one of the causative factors of the poor growth noted in some of these infants.

The pattern of feeding of the infants had an effect on the nutritional status of the infants. Among infants 0 – 4 months of age, those formula-fed suffered from malnutrition (wt. For age < 90% of NCHS standard), than those solely breast fed.

Conclusively, the educational level of the parents influenced the growth of the infants. The higher the educational level the better the growth of the infants.

**TABLE 3:** Classification of the infants nutritional status according to Waterlow's classification (1972)

% Height – for – age	% Weight – for – Height		
	Group I	Group II	Group III
≤ 90%	Group I	Group II	Group III
62 (25.8%)	47 (19.6%)	12 (5.0%)	–
> 90%	Group IV	Group V	Group VI
178 (74.2%)	23 (9.6%)	143 (56.6%)	15 (6.3%)
	70 (29.2%)	155 (64.6%)	15 (6.3%)

*Interpretation of Waterlow's classification*

Group I – infants stunted (≤ 90% Height – for – age) and malnourished (< 80% weight – for – height)

Group II – infants stunted but have normal nutrition (80 – 119% weight – for – height)

Group III – infants stunted (≤ 90% length – for – age) and obese (> 10% weight – for – height)

Group IV – infants normal in height (not stunted (>90%)) but malnourished (<80%) weight – for – height)

Group V – infants not stunted but with normal nutrition.

Group VI – infants not stunted but obese.

The nutritional status is classified as follows:

*Group I* – Chronic malnutrition (19.6%)

*Group II* – Normal nutrition but stunted (5.0%)

*Group III* – Obese but stunted (0%)

*Group IV* – Acute malnutrition (9.6%)

*Group V* – Normal nutrition and no stunting (56.6%)

*Group VI* – Obese (6.3%)

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