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Assessment of the Growth Profile of Preschool Children in the Rural Areas of Bayelsa State, Nigeria

Uvoh Solomon Micah, Olorunfemi O. Joyce, Amaye-Igonikon Babema T

1. Department of Human Physiology, Faculty of Basic Medical Sciences, College of Health Sciences, University of Port Harcourt, Nigeria

ABSTRACT

The growth profile of preschool children living in some rural areas of Bayelsa state was studied. The number of children studied was three hundred (300) out of which 158 were males and 142 were females. The result from the analysis of the anthropometric data obtained showed 93.5% of the children to be normal, 6.5% have mild PEM while non of the children had moderate nor severe PEM. The standard used for this study was the NCHS/WHO (1977) anthropometric data. The overall mean (x) weight for-age-for the male children was 17.5kg while that for the female children was 17.0kg.on the other hand, the overall mean (x) height for-age-for both male and female children is 1.11m. The mean height for-age-for female children aged 2, 3.5 and 5 years was higher than that of the male children by 0.3, 0.1 and 0.11m. the mean weight for-age-for male children and 2,3, 3.5 and 5 years is higher than that of the female children by 0.7kg , 0.3kg, 0.7kg and 1.11kg respectively. The occupational level of the parent is reflected on the growth profile of the children, for instance parent whose occupation were carpenters and unemployed contributed immensely to the 6.5% of children having mild PEM. The result showed that the children are well nourished. This is contrary to what is popularly believed of children in the childworld countries.

Key word: Protein Energy Malnutrition, World Health Organisation, National Center For Health Statistic, Anthropometry

*Corresponding Author Email: smicahu@yahoo.com

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INTRODUCTION

Growth is the irreversible increase in the size of a living being or any of its parts occurring in the process of development. (John H,Derekx, 1997).

Nutritional factors during early development not only have short term effects on growth, body composition and function of the preschooler but also extend a long term effect on ones health, disease and mortality risk in adulthood as well as development of neural functions and behavior, a phenomenon called metabolic programming. (Kotetzko, Aggett, Bindels et al). Aug. 1998.

In homogenous poor communities living under fairly uniform socio-economic and environmental conditions, considerable variation is observed in the health and growth profile of preschool children. At one end of the spectrum a very small number of preschool children exhibit only minimal growth retardation, at the other end some preschool children suffer from extreme forms of under nutrition such as kwashiorkor and marasmus, and in between are large number of preschoolers with various degrees of growth retardation Addo 1984.

It has been revealed that the growth profile of preschool children in the rural areas was lower than the urban areas and urban children under four years in Bayelsa State have very low rate of protein energy malnutrition (Hettiarachy, 1995 and akaninwor and Ayalogu, 1991 respectively while Oguranti (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 preschool children in rural parts of Bayelsa State. The present study was carried out in order to find out the growth pattern and to screen specific factors that are significantly associated with malnutrition in rural preschool children of a similar socio-economic growth in rural setting of Bayelsa State SALGA.

MATERIALS AND METHOD

This was a random study carried out in the rural areas of Bayelsa State, The aim of assessing the growth profile of preschool children in sagbama, Anibeze, Adagbabiri, Tumgbo, Toruabubou and Canan communities all in sagbama local government area of Bayelsa state, Nigeria.

Population and Sampling Method

The population of this study comprises of 300 preschool children between the ages of 2-5 years, in the rural areas of Bayelsa State, Sagbama Local Government Area. The entire study was conducted in the nursery schools of the preschool children randomly, which last about three weeks and two days.

Instrument used During the Study

Pre-tested, structured interview were conducted to collect information on child-related material, paternal and socio-economic and environmental factors from the preschool children. Child related factors were age, regularity of certain foods, incidence of malaria and other illnesses prior to the study period, 24-hour recall of food, duration of sleep, sports and type of water taken etc.

Maternal factors were education, occupation. Paternal factors were occupation, education and others.

The socio-economic factors were type of houses, source of drinking water, type of toilet facilities.

All the factors predicted to influence the growth profile were included in the prestructured questionnaire with numbers 300 copies.

Weight Measurement

Data on children's growth profile was obtained by measuring their weight. This was measured with minimum clothing and no shoes to the nearest 0.1kilogram (10g) using a bathroom weighing scale balance.

Height Measurement

A calibrated tape to the nearest centimeter converted to meter after measurement was used. The measurement was done while the children were standing erect on a smooth level board and it was from the feet to the head on the back. With a transparent ruler used to level the hairs in correspondent with the calibrated tape.

Procedures

The population of study was reached at their nursery schools. At the schools, official permission was first sort from the director in-charge. During the interviews the questionnaires were filled by the researcher and after that the weight and height were taken which constitute the anthropometric measures. At the end of the exercise the questionnaires were restricted.

RESULTS AND DISCUSSION

A total of three hundred preschool children were studied. Table 1 is an indication of the preschool children age distribution in a year, mean weight-for-age, mean height-for-age, standard deviations (SD) weight-for-age and height-for-age, percentile weight-for-age and percentage age-for-height compared with the equivalent NCHS/WHO reference standards for both sexes.

TABLE I is used to combine the results of the anthropometric measurement of both sexes of children.

TABLE 1: COMBINED SEXES ANTHROPOMETRIC RESULT

NO. OF CHILDREN	AGE (years)	NCHS WT (kg) (50th centile)	NCHS HT (metres) (50th centile)	NCHS WT (kg) (95th centile)	NCHS HT (metres) (95th centile)	NCHS HG (metres) (5th centiles	NCHS HG (metres) (5th centiles)	MEAN WT (kg)	MEAN HT (metres)	SD FOR WT (kg)	SD FOR HT (metres)	%WT	%HT
2.5	2	12.5	0.86	15.5	0.93	10.5	0.82	13.9	0.97	1.9	0.10	112	113
38	2.5	13.5	0.90	16.5	0.98	11.2	0.85	15	1.06	2.2	0.08	111	122
69	3	14.5	0.95	17.7	1.02	12	0.89	16	1.12	2.2	0.07	109	118
31	3.5	15.6	0.99	19	1.06	12.8	0.93	18.1	1.13	2.2	0.8	115	111
79	4	16.7	1.03	20	1.10	13.5	0.96	18.5	1.15	2.4	0.6	111	116
20	4.5	17.8	1.07	21.5	1.14	14.5	0.99	19	1.15	1.4	0.5	107	112
38	5	18.5	1.10	23	1.17	15	1.02	21	1.20	2.6	0.07	113	109
Mean (x)		15.6	0.99	19	1.06	12.8	0.92	17.4	1.11	2.1	0.07	111	114

TABLE II AND III are used to separate the results of the anthropometric measurement of the female and male children. This is to determine the major differences between the two sexes growth profile.

TABLE II :MALE CHILDREN ANTHROPOMETRIC RESULT

NO. OF CHILREN	AGE (years)	NCHS WT (kg) (50th centile)	NCHS HT (metres) (50th centile)	MEAN WT (kg)	MEAN HT (metres)	SD FOR WT (kg)	SD FOR HT (metres)	%WT	%HT	NCHS WT (kg) (95th centile)	NCHS HT (metres) (95th centile)	NCHS HG (metres) (5th centiles	NCHS HG (metres) (5th centiles)
2.5	2	12.5	0.86	14.4	0.95	1.5	0.13	112	110	10.5	0.82	15.5	0.93
38	2.5	13.5	0.90	14.8	1.07	2.0	0.07	111	119	11.2	0.25	16.5	0.98
69	3	14.5	0.95	16.2	1.12	2.1	0.07	110	118	12	0.89	17.8	1.06
31	3.5	15.6	0.99	18.3	1.13	1.7	0.10	116	114	12.7	0.93	19	1.06
79	4	16.7	1.03	18.7	1.16	2.4	0.06	114	113	13.5	0.96	20.1	1.10
20	4.5	17.8	1.07	19	1.14	1.4	0.06	107	106	14.5	0.99	21.5	1.14
38	5	18.5	1.10	21.9	1.19	2.3	0.05	112	109	15	1.02	23	1.17
Mean (x)		15.6	0.98	17.5	1.11	1.9	0.08	112	113	12.8	0.92	19.1	1.06

TABLE III: FEMALE CHILDREN ANTHROPOMETRIC RESULT

NO. OF CHILREN	AGE (years)	NCHS WT (kg) (50th centile)	NCHS HT (metres) (50th centile)	MEAN WT (kg)	MEAN HT (metres)	SD FOR WT (kg)	SD FOR HT (metres)	%WT	%HT	NCHS WT (kg) (95th centile)	NCHS HT (metres) (95th centile)	NCHS HG (metres) (5th centiles	NCHS HG (metres) (5th centiles)
2.5	2	12	0.86	13.6	0.98	2.2	0.07	116	114	10	0.81	14.2	0.93
38	2.5	13	0.90	14.9	1.06	2.4	0.08	115	118	10.8	0.85	16	0.97
69	3	14	0.94	15.6	1.09	2.2	0.07	121	116	11.5	0.88	17.5	1.01
31	3.5	15	0.98	17.9	1.14	2.6	0.08	120	116	12.2	0.92	18.5	1.05
79	4	16	1.02	18	1.14	3.6	0.07	112	112	13	0.95	20	1.08
20	4.5	17	1.05	17.9	1.16	1.2	0.03	105	110	13.8	0.98	21.5	1.12
38	5	18	1.08	21.4	1.22	5.6	0.06	116	113	14.5	1.01	22.6	1.16
Mean (x)		15.	0.96	17.0	1.11	2.8	0.07	115	114	12.3	0.91	18.6	1.05

TABLE IV: This is used to determine the ages and sex frequency distribution of the children, mean percentage weight-for-age for separated and combined sexes.

TABLE IV: AGE AND SEX FREQUENCY DISTRIBUTION OF CHILDREN

Age group (years)	**Percentage children Studied**		**Mean (%) weight for age**		
	No		Female	Male	Both sexes
2-3	132	(44%)	113	112	110
3.5 – 4	110	(36.7%)	116	115	113
4.5 – 5	58	(19.3%)	110	109	110
Total	300	(100%)	$\bar{(x)}$114	$\bar{(x)}$114	$\bar{(x)}$113

Key(x) = mean.

Using Gomez classification to determine the nutritional status of the children studied, the female, male and both sexes between two to five years (2-5 years), are PEM free. This is to say that both have been weight above normal (90%) indicating that the children are well fed. There is a common believe that children in the rural areas are usually malnourished but this rural village studied have proved to be exemptional.

TABLE V shows the nutritional status of the children according to Gomez. 93.5%have value above 90% indicating that they are PEM free and only 6.5% of the population studied had mild PEM. Non of the children had moderate nor severe PEM.

TABLE V: **classification of the nutritional status of children according to Gomez (1956). The table also shows the frequency distribution of PEM according to sex.**

PEM grade	Frequency			% Populatic
	Male	Fema	Total	
>90% (no PEM)	143	138	281	93.5
75-90% (mild PEM)	9	10	19	6.5
60-74% (moderate PEM	-	-	-	-
<60% (severe PEM)	-	-	-	-

From table V the 19 (6.5%) of children having mild PEM, 8 were from orphanage home, 9 were from homes whose parents stays at home or unemployed and 2 from carpenters according to the indication from the questionnaires.

TABLE VI: Different occupational level of parents of the children studied.

Parent occupational level	Percentage mean	
	Father	Mother
Civil servant	65 (21.7%)	20 (6.7%)
Farmer	43 (14.5%)	93 (31%)
No parent	5 (1.6%)	3 (1.0%)
Carpenters	35(11.70%)	-(-)
Stays in the house	2 (0.7%)	10(3.3%)
Trading	11(3.7%)	13(4.3%)
Total	161 (46.3%)	139 (53.7%)

These are plotted to compare the results of the anthropometric measurements with the NCHS/WHO references standards.

FIGURE 1 is the weight for-age-for combined sexes of the children compared with NCHS (1977)/WHO references growth curves. The growth profile of the children increases gradually from year two to year five as show from the growth curve.Though between age 3.5 and 4 years are almost constant before it increases gradually to its highest peak.

FIGURE 2 is the height for-age-for combined sexes compared to that of NCHS (1977)/WHO references standard growth curves.

Here the growth profile of the children is above the reference standards. The curve increases between the age of 2 to 3 years and decline randomly before rising again from age 4.5 to 5 years.

FIGURE 3 is the weight-for-age growth curves for the separated sex compared with the reference standard.

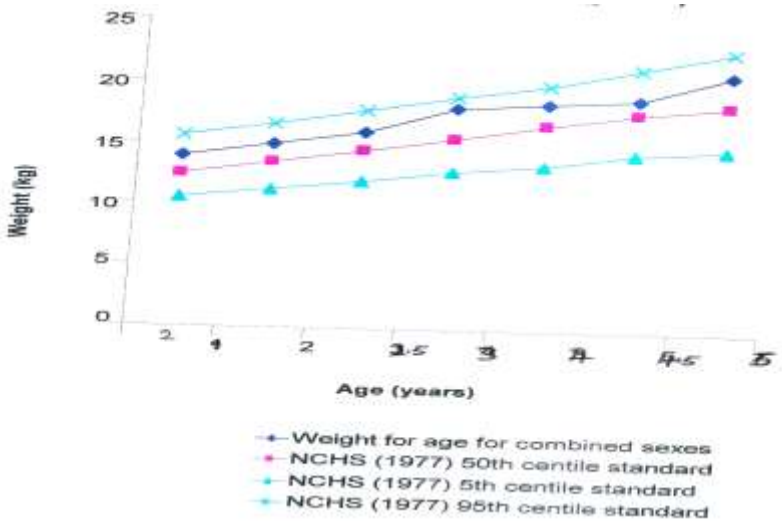

Figure: 1 Weight for age for combined sexes (years)

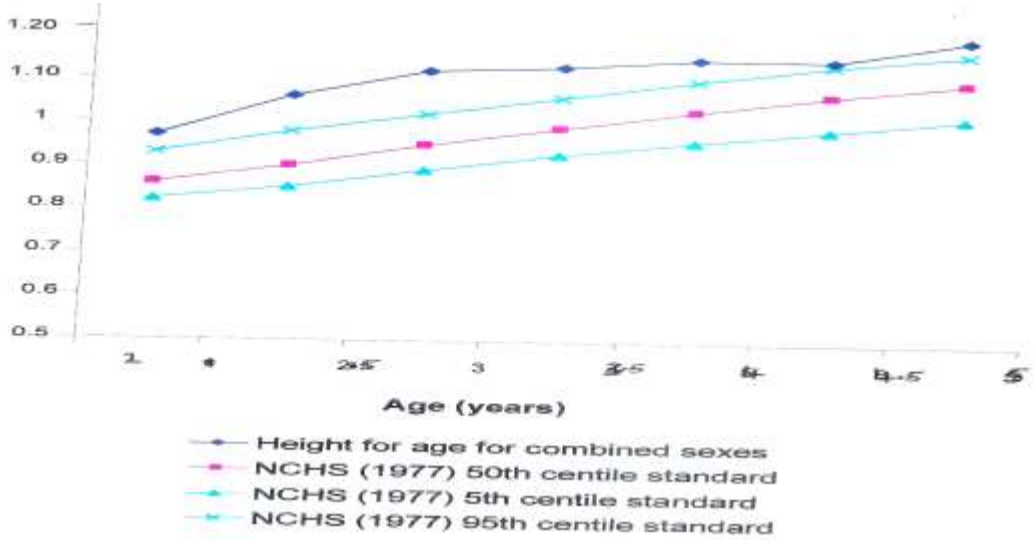

Figure. 2: Height for-age for combined sexes

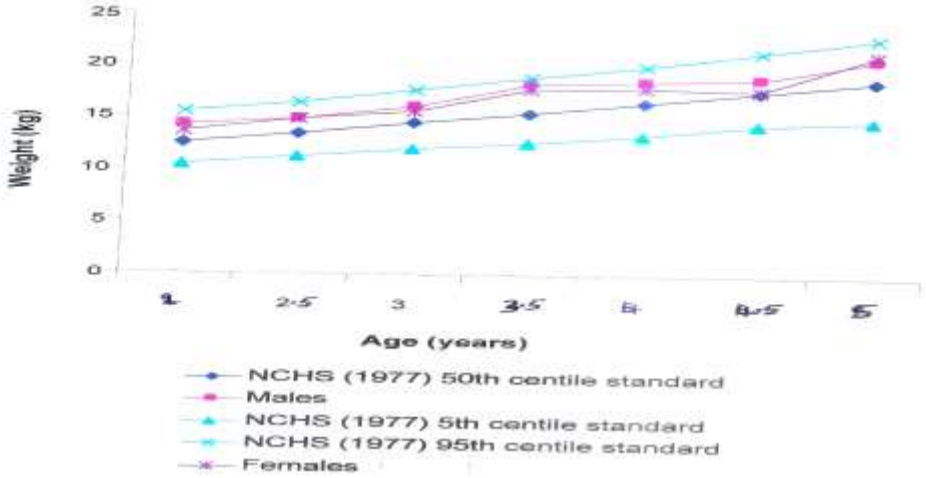

FIG. 3 Weight for age of preschool children growth curves obtained from rural areas of Bayelsa State. (separate sexes)

The male children are above the female children within the reference curves in year 2, 3, 3.5, and 4.5 but in about 2.5 years the males curve intersect with that of the female growth curve and decline gradually up to 3.5 years were it falls and rises and intersect with the female growth curves.

Thus the final growth curve of the female children is slightly higher than that of the male children as can be seen from the graph.

FIGURE 4 is the height-for-age children growth curves for the separated sexes compared with the reference standard.

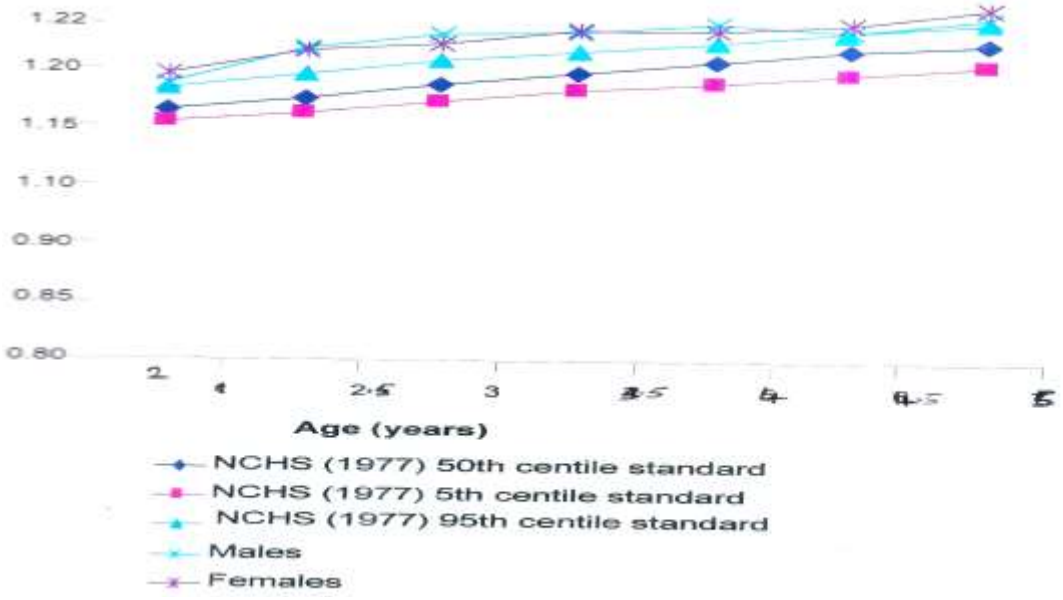

Figure 4: Height for-age of preschool children growth curves obtained from the rural areas of Bayelsa State (Separate sexes)

Between 2.5 to 3 years the male children are slightly above the females, in year 4 they are slightly above the females but in the final analysis the females growth profile is higher than that of the males. But females and males growth curves are above the reference standard.

From the result of the studies the growth curves of the children falls between the 50th and 95th centile standard of NCHS (1977). In figure 2 the growth curves of the children were above all the standards.

Figure 3 and 4 shows that the growth curves of the female children is slightly above that of the male children. The children were all taller than the 50th centile standard in fig. 4 and between 50th and 90th centile.

Table 1: The weight for age of the children was found to be between 50th centile and 95th centile standard which shows that the children are well nourished.

The weight for age of the males and females were found not to be too different although that of the males were higher than that of the females from 2 years to 4.5 years and intersect with that of the females between 4.5 years and 5 years of age.

The data was analyzed using Gomez classification. From Gomez classification 93.5% of the children were found to be normal and 6.5% had mild PEM were from homes whose parents are late, unemployed and carpenters.

For the fact that large population were normal shows that the children must be adequately nourished. The village is well noted in Agriculture and according to the prominent men in the village much emphasis was layed in Agriculture. It was also noted that every house had a small garri processing facilities unlike many other villages in the country.

This is a nice story different from what is popularly believed of children in the child world country.

CONCLUSION

The results of the study confirm earlier reports that there was no prevalence of moderate and severe malnutrition. The study indicated that 93.5% of the children growth profile were normal and 6.5% of the population studied growth profile were slightly below standard. The occupational level of the parents have a significant effect on the growth profile of the children. For instance those whose parents are carpenters and late contributed mostly to the number of children (6.5%) that had mild PEM. Weight for age is an indicator of either current for past nutrition, whereas height for age is an indicator of past nutrition. The children's age had a significant positive effect on weight for age and height for age. 24 hours recall of food intake and duration of sleep had a significant effect on the growth profile of the children. This is because regular food intake and sleep result or leads to an increase secretion of growth hormones. This study however did not treat exhaustively all the problems associated with the children growth profile. Meanwhile this is recommended for further research in these rural areas. Though the children were not malnourished, meanwhile the socio-economic status of these families should be maintained .

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