
**GROWTH PATTERN AND NUTRITIONAL STATUS OF SCHOOL CHILDREN
AGED 6-14 YEARS OF SELECTED SCHOOLS IN OSUN STATE,
SOUTHWEST-NIGERIA**

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Abstract

The purpose of this study was to determine the growth pattern and nutritional status of school children aged 6-14 years of selected schools in Osun state, Southwest-Nigeria. The anthropometric parameters that were employed included height for weight (wasting) 6-8years, height-for-age (stunting) 6-8years, and Weight-for-age (underweight) 6-8years. Also determined were BMI for aged 9-14 years, prevalence of stunting and thinness in the age group of 9-14 years and compared with World Health Organization reference standard. The results revealed that prevalence height for weight (wasting) 6-8years, height-for-age (stunting) 6-8years, and Weight-for-age (underweight) 6-8years were 36%, 20%, and 4% respectively. Height- for- age and BMI indices for age 9-14 years showed prevalence of stunting and thinness was 37.7% and 12.2% respectively. Nutritional analysis revealed that wasting were higher in female than male from ages 6 to 8years, stunting was apparent at age 8 years in both male and female, but for underweight were only found at age 8 in female. In conclusion, intervention programmes such as appropriate dietary intake formulations, proper school meals plan and adequate exercise should be incorporated into the school curriculum to curb the occurrence of wasting, stunting, underweight and thinness in these schools.

Key words: Anthropometric measurement; BMI, school children, nutritional status

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1. INTRODUCTION

Evidences abound that appropriate feeding habits in the early stage years of life improve the outcomes of children's physical and mental health throughout life but in resource poor environment such as in some communities in Nigeria, malnutrition places children at high risk of morbidity and mortality. It has been shown that nutritional disorders are attributing to ailments such as kwashiorkor, growth retardation, and impaired mental development (Parker et al 2011).

An anthropometric measurement is a method of determining caloric nutritional status using physiological growths (WHO 1983, 1995, 2006). BMI is another good way to determine if your weight is healthy for your height, being overweight puts strain on your heart and can lead to serious health problems such as type 2 diabetes, cardiovascular disease, dyslipidemia and hypertension (OCAE, 2004, WHO 1983, 1995, 2006). In Nigerian 2008 Demographic Health Survey report, forty-one per cent of Nigerian children underweight five years of

age were stunted, 23 per cent underweight and 14 per cent have wasted limbs, (NPC 2008). Similar comparative study of nutritional status was conducted by some researchers in Urban and Rural Nigerian for School Children. In the rural area, prevalence of underweight, wasting and stunting were 70.5, 17.8 and 35.8%, while in the urban area they were 52.2, 15.9 and 19.8%, respectively. An overall prevalence of underweight, wasting and stunting were 61.2, 16.8 and 27.6%, respectively (Oninla et al 2006). Osun State came into existence on 27th August, located in South West, Nigeria with the Population of 2,551,522, is a landlocked and occupies 9251 square kilometers. Majority of the populace were traders, artisans and farmers (NPC 2008). The farmers produce food crops such as yam, maize, cassava, beans and cocoyam, (OSNIG 2012). The artisans make hand-woven textiles, tie and dye clothes, leather work, and calabash carving and mat-weaving which indicate that they were social economic lacking and many of their children were sent to public school, (OSNIG, 2012). Public schools were government owned and

managed school but majority of the attendee of the school children were from low income earner parents. Hence our objective of this study was to determine the growth pattern and nutritional status of school children aged 6-14 years of selected schools in Osun state, Southwest-Nigeria, (OSNIG 2012).

2. MATERIALS AND METHOD

Population that were included in the study, were randomly selected from School children aged 6-14 years, in Osun state public schools with a total number of 1150 (male- 680 and female -470).

Anthropometric Data Health workers, public health analysts, nurses' and students who have been trained to conduct all body measurements, (NCHS 2000, WHO 1983, 1995). Waist circumference was measured in centimetres at the narrowest circumference between the lower border of the ribs and the upper border of the iliac crest. Hip circumference was measured in centimetres at the circumference at the level of the iliac crest. Height was assessed using a Soehnle laser height-measuring unit (Soehnle-Waagen). Weight was recorded with a Precision Health Scale UC-300 (A&D Company Limited) accurate to within 100 grams. All school children wore light clothing and their shoe was off. Birth records were obtained from the school. Both height and weight measurements were used to calculate each child's body mass index ($BMI = \text{child weight (kg)} / \text{height}^2 \text{ (m)}$). BMI was converted from meter to centimetre by simply multiply it by 10,000. Statistical Package for the Social Sciences (spss) software was used to calculate the mean and standard deviation of the Height

in cm and Weight in Kg, (NCHS 2000, WHO 1983, 1995, 2006).

3. RESULTS AND DISCUSSION

Table 1 shows the World Health Organization guidelines for anthropometric indices and cut off points for indicators such as stunting (Height- for- age), wasting (height- for- weight), underweight (weight-for-age) for aged 6-8years<-SD respectively. Stunting and thinness (BMI-for-age) indicators for aged 9-14 years was determined at <-SD and < 5th percentile respectively (NCHS 2000, WHO 1983, 1995, 2006).

Table 2 shows the Mean and standard deviation of height in cm, and weight in Kg using statistical package for the social sciences (spss) software for aged 9-14 years. Apart from age group 6 to 9 years where results showed that boys were shorter in Height than the weight of girls. Girls from age-group 7-8 years were heavier than that of boys 'also the heights the girls were found taller. Boys were found taller at ages 12 and 14 than girls but at ages 6, 7, 8, 9 11 and 13 girls were found taller. The results showed that Height at childhood were better till the age of 10, also the weights were the similar or better throughout when compared with Children (6-14 Years) of Tea Garden Worker of Assam in India at age groups 6, 9 12 and 13, (Medhi, 2006). However, if BMI is applied to analysis the results as below 18.5, 18.5 - 24.9 and 25.0 - 29.9, underweight, healthy and overweight respectively. Healthy/overweight and underweight overweight were 27%, 73% respectively, however this is to confirm other workers' report in Nigeria and elsewhere, (Oninla et al 2006 Shariff *et al* 2000, Medhi *et al*, 2006, Ibronke, *et al* 2014ab).

Table1: World Health Organization guidelines for anthropometric indices and cut off points

Indicators	6-8 years	
Anthropometric variable		Cut off points
Stunting	Height- for- age	<-SD
Wasting	Height- for- weight	<-SD
Underweight	Weight- for -age	<-SD
9-14 years		
Stunting	Height- for- age	<-SD
Thinness	BMI- for- age	< 5 th percentile

Table 2: Mean and standard deviation of Height in cm and Weight in Kg

Age in years	Height in cm	Weight in Kg	BMI(kg)/ m^2
	Mean± SD	Mean± SD	Mean± SD
6+M10	114.30±0.50	19±0.35	14.54 ±0.42
F 20	116.97±3.5	20.50 ±0.70	14.99±.37
7+M30	121.50±6.00	23.17 ±2.00	15.69±70
F30	122.06±6.87	21.89±1.89	14.70±.58
8+M70	120.42±6.01	27.10±5.34	16.48±1.68
F90	124±88±5.48	27.05±4.11	17.39±2.82
9+M70	122.14±7.20	26.78±4.01	18.13±3.54
F70	130.09±5.89	27.68±3.57	16.40±2.01
10+M80	131.33±6.36	30.12±3.42	17.53±2.87
F130	128.50±5.80	27.64±7.10	16.76±4.40
11+ M40	127.59±13.54	37.30±5.37	23.66±8.26
F20	128.33±10.20	29.15±2.66	17.78±1.42
12+M210	138.53±7.68	33.72±5.58	17.50±1.82
F 80	133.75±8.02	34.57±5.06	19.35±2.48
13+M100	144.34±8.91	39±8.12	18.89±2.76
F10	146±0.20	45±0.40	21±0.32
14+M70	145.47±12.69	37±10.08	17.46±2.66
F20	139±1.41	35.50±0.70	18.38±7.07

Nutritional Status

Table 3 shows the prevalence of height for weight (wasting) 6-8years, prevalence height for age (stunting) 6-8years and prevalence of (weight-for-age) underweight in the age group of 6-8 were 36%, 20%, and 4% respectively. Wasting were higher in female than male from ages 6 to 8years, stunting was apparent at age 8 years in both male and female, but for underweight were only found at age 8 in female. It may be caused by inadequate food

intake thus resulted in loss of weight and the onset of malnutrition. Subjects may need special formulations for their body building or lack of adequate protection and proper care at childhood; hence Children were venerable to sickness at this early age-group of 6 -8 years. This corroborate with previous findings, (Shariff et al 2000, Medhi et al, 2006, NCHS 2000, WHO 1983, 1995, 2006).

Table 4 shows the Prevalence of stunting (Height- for- age) and thinness (BMI for age) in the age group of 9-14 years was 37.7% and 12.2% respectively.

Prevalence of stunting was common among male from age group 9-14 years, female age group 11, 12 and 14 but does not appeared in female age group 9-10 and 12

Prevalence of thinness occurred in male age group 9 to 14 and female age group 9 but disappeared in female age group 11 and above years. This may be as a result of inadequate food intake, divested and assaults on subjects at childhood that later metamorphosis to adolescence age. It is obvious that female subject could cope than male when transforming to adolescence stage, (Monárrez-Espino et al, 2004, PAHO 2003, NCHS 2000, WHO 1983, 1995, 2006).

4. CONCLUSION

School children aged 6-14 years of selected schools in Osun state, Southwest-Nigeria were malnourished and may have taken place for inadequate food intake, lack special formulations for their body building, lack of adequate protection and proper care at childhood; hence Children were venerable to sickness. Malnutrition will not only adversely reduce the intellectual capability of the School children, but will also retard the growth rate. Intervention programmes such as dietary intake must be improved, proper school meals plan should be enhanced, adequate exercise should be incorporated into the school curriculum to curb the occurrence of wasting, stunting, underweight and thinness.

Table 3: Prevalence of wasting, stunting, and underweight in the age group of 6-8

Prevalence of height for weight (wasting) 6-8years.				
Sex	6years	7 years	8 years	Total
Male	-	10(33.3%)	10(14.3%)	20(18%)
Female	10(50%)	30(100%)	30(33.3%)	70(50%)
Total	10(33.3%)	40(66.7%)	40(25%)	90(36%)
Prevalence of height for age (stunting) 6-8years				
Sex	6years	7 years	8 years	Total
Male	-	-	30(42.8%)	30(27.3%)
Female	-	-	20(28.6%)	20(14.3%)
Total	-	-	50(31.25%)	50(20%)
Prevalence of underweight in the age group of 6-8 (Weight-for-age).				
Sex	6 years	7 years	8 years	Total
Male	-	-	-	-
Female	-	-	10(14.3%)	10(4%)
Total	-	-	10(14.3%)	10(4%)

Table 4: Prevalence of stunting and thinness in the age group of 9-14 years.

Stunting (Height-for-age)							
Sex	9 years	10 years	11 years	12 years	13years	14 years	Total
Male	30 (42%)	20(28.6%)	10(50%)	40(19%)	50(50%)	20(28.5%)	170(36.3%)
Female	-	-	20(50%)	50(38%)	-	100(100%)	170(36.2%)
Total	30 (21%)	20(9.5%)	30(50%)	90(31%)	50(45%)	120(14%)	340(37.7%)
Thinness (BMI for age)							
Sex	9 years	10 years	11 years	12 years	13 years	14 years	Total
Male	10(14.3%)	10(12.5%)	10(50%)	20(9.5%)	10(10%)	10(14.3%)	70(14.9%)
Female	10(14.3%)	30(23.1%)	-	-	-	-	40(8.5%)
Total	20(14.3%)	40(19.1%)	10(50%)	20(9.5%)	10(10%)	10(14.3%)	110(12.2%)

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