

Evaluation of the Nutritional Status of Primary 1 Pupils in Abeokuta South Local Government Area of Ogun State, Nigeria

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Abstract: The nutritional status of 542 primary pupils from different socio-economic classes in Abeokuta South Local Government of Ogun State was studied. Weight for age; height for age and weight for eight anthropometric parameters were employed. The data obtained were compared with the United States National Centre for Health Statistics (NCHS) reference population. When all the pupils studied were considered together, 51.7, 48.6 and 1.3% were underweight, stunted, wasted and overweight, respectively. When pupils were considered based on sex and school type, significantly ($p < 0.05$) higher percentage of pupils from low socio-economic status (Type I schools) were underweight (74.7%), stunted (64.6%) and wasted (23.4%) than from the medium (Type II schools) and upper socioeconomic status (Type III schools). However, the prevalence of overweight was significantly ($p < 0.05$) higher among pupils from upper socioeconomic status. Also, significantly ($p < 0.05$) more boys were underweight, stunted and wasted than female within pupils from each socioeconomic status. There is therefore, the need for Nigerian government to address the twin issue of widespread poverty and unemployment in the country with a view to improving the socioeconomic status of parents, which will ultimately translate to improved nutritional status among the school children.

Key words: Nutritional status, primary school pupil, anthropometric parameters

INTRODUCTION

The issue of malnutrition has continued to attract the attention of nutritionist and health personnel worldwide. In fact, malnutrition is now being regarded as a public health problem especially in developing countries, Nigeria inclusive (FGN/UNICEF, 1994). Prevalence studies of anthropometric indices in school age children in Nigeria showed that malnutrition is a major problem with 45-60% of school children being malnourished and 50 and 34% of school children being underweight and stunted respectively (Toriola, 1991; Walker, 1991). Also, the recent food consumption and nutrition survey in Nigeria revealed that 36% of children under 5 years suffered from iron deficiency (Mazitz-Dixon *et al.*, 2004). Similarly, there is an increase in the prevalence of wasting in pre-school children (0-5 years) from 33.5% in 1999 to 42.0% in 2003 (WHO, 2003).

In view of the continued deterioration of the nutritional status of pre-school children (Mazita-Dixon *et al.*, 2004) and the decline in the socio-economic condition in Nigeria, the incidence and prevalence of malnutrition is likely to be on the increase. There is therefore, the need to regularly and continually assess the nutritional status of the school children. The objective

of this study, therefore, is to determine the prevalence of underweight, stunting and overweight among the primary I pupils in Abeokuta South Local Government Area of Ogun State, using anthropometric parameters.

MATERIALS AND METHODS

The study was carried out in Abeokuta South Local Government Area of Ogun State. Pupils in primary I (first year) in the primary schools constituted the population for the study. There are 45 government approved public and 32 government approved private primary schools in this local government area. Out of the 32 government approved private primary schools, seven charged 5000 Naira (N 5000.00) and above and 25 charged below five thousand Naira school fees per term. Using this criterion, i.e school fees charged per term, the schools were categorized into three viz: government public schools (where no school fees is charged) were grouped as Type I; private school that charged less than 5000 Naira per term were grouped as Type II, while private schools that charged five thousand Naira and above per term were grouped as Type III. Pupils in Types I, II and III schools were taken to represent pupils from low, medium and upper socio-economic statuses, respectively.

Multistage random sampling technique was used to select the schools and pupils. Thirty percent of schools from each type were randomly selected from each Type of school. This gave 14, 7 and 3 schools in Types I, II and III respectively. Sixty percent of the total number of pupils in each class in the different types of schools were selected. A total of 542 pupils were studied with 384, 176 and 82 from Types I, II and III schools, respectively.

The ages of the children were obtained from the school register. Height was measured using a specially constructed wooden stadiometer and measurement was to the nearest centimeter. Weight was determined using a Salter bathroom scale. The scale was calibrated periodically with standard weight to ensure its reliability. The pupils height were determined bare footed and the weight were taken in their underwears only. Thereafter, the weight for age, height for age and weight for height were converted to the corresponding Z-score and were then compared with the standard reference measurement by National Centre for Health Statistics (NCHS, 1986).

Analysis of data: Comparison was made between the 3 school types and sex using Chi-Square test. Differences were taken to be statistically significant where $p < 0.05$. To determine the proportion of underweight, stunting, wasting and overweight the following cut off points were used. Underweight, Z-score of weight for age $< -2SD$; stunting, Z-Score of height for age $< -2SD$; wasting, Z-Score of weight for height $< -2SD$ and overweight, Z-Score of weight for height $> +2SD$ (WHO, 1986).

RESULTS

The results of the study are presented in Table 1-3. The age and anthropometric measurement of the pupils are presented in Table 1. The mean age (SD) of pupils in the school types I, II and III are 6.2 ± 0.93 ; 5.8 ± 0.6 and 5.7 ± 0.6 years, respectively. There was no significant difference ($p > 0.05$) in the ages of the pupils in all the school types (Table 1). This finding was at variance with that of Ajayi and Akinyinka (1999) who reported significant differences in the age of primary I pupils of public Government primary schools and those of private primary schools in Ibadan metropolis. Also, there was no significant difference ($p > 0.05$) among pupils of both sexes in all the school types studied.

The mean height (SD) of pupils of Type I schools (111.9 ± 6.2 cm) was not significantly lower than that of pupils in Type II schools (114.2 ± 4.9 cm) but was significantly lower than that of pupils in Type III schools (117.2 ± 4.8 cm) ($p < 0.05$). However, there were significant differences in the height of both male and female students in the same type of schools (Table 1). Similar finding was reported by Ajayi and Akinyinka (1999).

Table 1: The age and the anthropometric measurements mean \pm (SD) of pupils based on the school type and sex

School type	Age (years)	Height (cm)	Weight (kg)
School type I			
Total (n = 384)	6.2 (0.9)	111.9 (6.2)	17.1 (5.8)
Males (n = 179)	6.1 (0.9)	111.6 (5.2)	17.3 (7.9)
Females (n = 205)	6.3 (1.0)	112.2 (7.0)	16.8 (3.3)
School type II			
Total (n = 176)	5.8 (0.6)	114.2 (4.6)	18.6 (1.9)
Males (n = 88)	5.9 (0.6)	115.2 (4.6)	18.9 (2.0)
Females (n = 98)	5.7 (0.5)	113.3 (4.8)	18.3 (1.9)
School type III			
Total (n = 82)	5.7 (0.6)	117.2 (4.8)	20.3 (2.2)
Males (n = 35)	5.7 (0.6)	117.8 (4.7)	20.6 (2.1)
Females (n = 47)	5.7 (0.6)	116.7 (4.6)	20.1 (2.4)

Table 2: Classification of nutritional status based on Z-scores (n = 542)

Nutritional classification	Z-scores	Percentage pupils
Underweight (Weight for age)	$< -2SD$	51.7
Stunting (Weight for age)	$< -2SD$	48.6
Wasting (Weight for height)	$< -2SD$	15.8
Overweight (Weight for height)	$> +2SD$	1.3

The mean weight of pupils in Type I schools (17.1 ± 5.8 kg) was not significantly lower than the 18.6 ± 1.9 kg pupils of Type II schools but was significantly lower than the 20.3 ± 2.2 kg of pupils in Type III schools (Table 1). There were no significant differences in the weights of both male and female students within each type of schools.

The significantly lower height and weight of pupils in schools (Type I) than those of pupils from parents in the upper socio-economic class (Type III) seemed to corroborate the findings of Onimawo *et al.* (2006) who observed that urban school children had higher body height and weight than their rural counterpart.

Table 2 presents the classification of the nutritional status of the pupils based on the Z-Score. 51.72% of the total sample population studied (n = 542) were underweight; 48.6% stunted; 15.8% wasted and 12.3% overweight.

Table 3 shows the distribution of anthropometric indices of malnutrition based on sex and school type. With respect to underweight, 74.7; 47.3 and 13.6% pupils of school Types I, II and III, respectively were underweight. The differences in the percentage underweight were statistically significant ($p < 0.05$). For stunting, 64.6, 51.4 and 8.7% of pupils in school Types I, II and III, respectively were stunted. While 23.4, 12.4 and 8.7% of pupils in school Types I, II and III, respectively were wasted. The issue of overweight was not so much pronounced as 1.13, 1.8 and 2.1% of pupils of school Types I, II and III, respectively were overweight. All the differences in the anthropometric indices among the school types were statistically significant ($p < 0.05$). Within each school type, significantly more male pupils were underweight, stunted, wasted and overweight than the female ($p < 0.05$).

Table 3: The distribution of anthropometric indices of malnutrition based on sex and school type

School type	(Age years) (SD)	% Underweight	% Stunting	% Wasting	% Overweight
Type I					
Total (n = 384)	6.2 (0.9)	75.4	64.6	23.4	1.3
Males (n = 179)	6.1 (0.0)	71.4	67.1	16.8	0.2
Females (n = 205)	6.3 (1.0)	52.8	53.1	14.7	0.7
Type II					
Total (n = 176)	5.8 (0.6)	47.3	51.4	12.4	1.8
Males (n = 88)	5.9 (0.6)	51.2	42.1	8.7	1.1
Females (n = 98)	5.7 (0.5)	38.8	40.9	6.5	1.4
Type III					
Total (n = 82)	5.7 (0.6)	13.6	8.7	8.7	2.1
Males (n = 35)	5.7 (0.5)	11.7	10.5	9.6	0.3
Females (n = 47)	5.7 (0.6)	9.8	6.3	8.9	2.7

DISCUSSION

The nutritional status of children in this study was compared with a reference population defined by the US national Centre of Health Statistics (NCHS) as recommended by the World Health Organisation (WHO, 1986).

The study revealed that the average age of entry into the primary school is between 5.7 and 6.2 years. The fact that there was no significant difference in the age of entry into the primary school among the 3 types of school, as against the finding of Ajayi and Akinyinka (1999) showed that more parents especially among the low socio-economic group are now aware and eager to send their children to school as early as possible. This is a welcome development and should be encouraged.

The high prevalence of underweight, 74.7%, among the pupils of school Type I may, however, be a reflection of the poor socio-economic status of their parents which will invariably influence the food intake of the pupils. While the relatively low prevalence of underweight, 13.6% among the pupils of school Type III may be a reflection of the high socio-economic status of their parents and hence good food intake by the pupils. Stunting was also prevalent (64.6%) among the pupils of school Type I. Since stunting usually starts very early in life and is related to chronic nutritional deficiency, it implies that pupils of school Type I might have been subjected to long-term malnutrition before entry into the school. Although, the prevalence of wasting was not as high as with underweight and stunting, the highest, 23.4%, was also observed among school Type I. Similarly, the problem of overweight was not so much pronounced among the school types, but the highest prevalence, 2.1%, was observed in school Type III. This buttressed the age long positive correlation between obesity and affluence.

The high prevalence of underweight and stunting reported in this study, especially among the public

primary schools, where majority of the people in the low socio-economic stratum send their children to, is a pointer to the fact that there has not been any appreciable improvement in the nutritional status of children in Nigeria. Although there may be other causative factors to the problem of malnutrition in Nigeria, dietary inadequacy resulting from continued deterioration of living standard is a major factor. There is therefore, need for intervention programmes to combat or reduce these high rates of underweight, stunting and wasting among school children. Apart from a general improvement in the standard of living of the people, there is the need to aggressively pursue and improve the school meal programme and complemented with routine health checks especially in the government public schools.

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