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Changes in the Nutritional Status of School Children and Adolescents in Abeokuta, Nigeria between 1983 and 2006

Les changements dans l'état nutritionnel des enfants d'âge scolaire et des adolescents dans Abeokuta, au Nigeria entre 1983 et 2006

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ABSTRACT

BACKGROUND: **The prevalence of overweight and obesity among children is increasing worldwide with significant health and social consequences.**

OBJECTIVE: **The aim of this study was to determine the current nutritional status and its changes between 1983 and 2006 among school children and adolescents in a South western Nigeria town.**

METHODS: **Five hundred and seventy children aged 5 to 19 years from randomly selected primary and secondary schools in Abeokuta, Nigeria had their weights and height measured using standard techniques. The data obtained were compared with data obtained from a similar cross sectional survey carried out in 1983. The National Centre for Health Statistics/ World Health Organisation guidelines and cut-off points were used to determine the degree of underweight and stunting. Obesity prevalence was assessed using weight for age greater than 120 % of expected.**

RESULTS: **The mean age of the participants was 12.2 ± 3.41 years, 296 (51.5 %) were males. The mean Weight-for-Age Z –score and Height-for-Age Z-score were -1.2773 ± 1.14 and – 0.8569 ± 1.19 respectively. The prevalence rates of underweight and stunting were 24.7 % and 17.4 % respectively. Using weight greater than 120 % of expected weight for age, five (1.7 %) male and 7 (2.6 %) female children were obese compared to 3.3 % male and 5.1 % female children who were obese in 1983.**

CONCLUSIONS: **The prevalence of overweight and obesity has remained relatively unchanged between 1983 and 2006. However, under-nutrition remains a major nutritional problem among school children and adolescents in Abeokuta, Nigeria. WAJM 2011; 30(6): 425–431.**

Keywords: **Overweight, obesity, prevalence, c hildren, Nigeria**

RÉSUMÉ

CONTEXTE: La prévalence de surpoids et d'obésité chez les enfants est en augmentation dans le monde entier à la santé et les conséquences sociales importantes.

OBJECTIF: Le but de cette étude était de déterminer l'état nutritionnel actuel et de ses changements entre 1983 et 2006 chez les écoliers et les adolescents dans une ville du Sud ouest du Nigeria.

MÉTHODES: Cinq cent soixante-dix enfants âgés de 5 à 19 ans choisis au hasard à partir des écoles primaires et secondaires dans Abeokuta, au Nigeria avaient leur poids et la hauteur mesurée à l'aide des techniques standard. Les données obtenues ont été comparées avec les données obtenues à partir d'une enquête similaire en coupe transversale réalisée en 1983. Le Centre national de la statistique de la santé et les lignes directrices de l'Organisation mondiale de la santé et de coupure de points ont été utilisés pour déterminer le degré de l'insuffisance pondérale et le retard de croissance. Prévalence de l'obésité a été évaluée à l'aide de poids pour un âge supérieur à 120% du poids attendu.

RÉSULTATS: L'âge moyen des participants était de 12,2 + 3,41 ans, 296 (51,5%) étaient des hommes. La moyenne de poids-pour-âge Z-score et taille-pour-âge Z-score étaient – 1,2773 + 1,14 et – 1,19 + 0,8569 respectivement. Les taux de prévalence de l'insuffisance pondérale et le retard de croissance était de 24,7% et 17,4% respectivement. Utilisation de poids supérieur à 120% du poids attendu pour l'âge, cinq (1,7%) hommes et 7 (2,6%) enfants de sexe féminin étaient obèses, comparativement à 3,3% des hommes et de 5,1% enfants de sexe féminin qui étaient obèses en 1983.

CONCLUSIONS: La prévalence de surpoids et d'obésité est resté relativement inchangé entre 1983 et 2006. Toutefois, la sous-nutrition reste un problème nutritionnel majeur chez les écoliers et les adolescents dans Abeokuta, au Nigeria. **WAJM 2011; 30 (6): 425–431.**

Mots-clés: Surpoids, obésité, la prévalence, les enfants, le Nigeria

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Abbreviations: BMI, Body mass index; **HAZ,** Height-for-Age Z-score; **IOTF,** International obesity task force; **WAZ,** Weight-for-Age Z-score.

INTRODUCTION

The World Health Organisation (WHO) has defined obesity as a disease in which excess body fat has accumulated to such an extent that health may be adversely affected.[1] Overweight and obesity are now considered a global health problem as they affect both adults and children from developed and developing countries.[2]

The prevalence of overweight and obesity among children appears to be increasing alarmingly in many developed and developing countries around the world.[2, 3] The International Obesity Task Force (IOTF) has reported that one in 10 children are overweight with at least 155 million school-age children worldwide being affected.[4] About 30-45 million of the overweight children are classified as obese and account for 2-3% of the world's children aged 5-17 years. A further 22 million younger children are also affected according to previous IOTF global estimates based on WHO data for under fives.[5]

Obesity trends have risen to epidemic levels among children population in the western countries [6-8]. Overweight and obesity are now emergent paediatric health problems in some developing countries.[3,9–11]

Obesity is associated with significant health problems in the paediatric population comprising children and adolescents. Childhood obebity predicts obesity in the adult.[12]

Using weight for age greater than 120% of expected, Akesode and Ajibode in 1983 reported prevalence of obesity in Abeokuta as 3.2 % for males and 5.1 % for females.[13] As a result of changing lifestyle and adaptation of western diet instead of the traditional diet of whole grain and fiber, we hypothesized that, the prevalence of overweight and obesity among school children and adolescents in Abeokuta would have increased.

This study was therefore aimed at determining the current nutritional status and comparing prevalence of overweight and obesity among school children and adolescents in Abeokuta with the rate reported by Akesode *et al* in 1983.[13] The results would indirectly serve as a measure of trends in overweight and obesity among school children and adolescents in Abeokuta, Nigeria.

SUBJECTS, MATERIALS, AND METHODS

Design and Settings

This was a prospective and cross-sectional study carried out in primary and secondary schools in Abeokuta, South western Nigeria. Abeokuta is the capital of Ogun State and is located on longitude 7' 10' N and latitude 3' 26' E, South Western Nigeria. Abeokuta has an estimated population of 4 million inhabitants.[14] It is predominantly occupied by people of the Yoruba tribe but urbanization and industrialization have brought in many other ethnic groups.

Participants and Selection

As at the time of the study, there were a total of 322 schools in Abeokuta (the ratio of public to private primary schools was 1:1 while the ratio of public to private secondary schools was 3:1). However, the population of pupils in each public primary school was almost double that in each private primary school but the population in each of the public and private secondary schools were almost equal. Thus, a multi-stage random sampling method was used to select seven schools for the study. In order to allow equal representation of the pupils, two private primary schools were selected along with one public primary school. One private and three public secondary schools were selected by balloting. From each of the selected schools, all grades were studied (Primaries 1 – 6; junior and senior secondary school 1 – 6). On the day of the study, one arm from each grade was selected by balloting. Ballot papers were served to all the children in the selected arm. These ballot papers were blank except those that were marked with numbers 1 to 15. After all the students had picked a paper, they were asked to open and those with numbers 1 to 15 were selected. Ninety pupils were selected from each of the seven schools.

Data Collection

Each pupil was interviewed in a private room, one at a time, using a proforma to obtain information on demographic and socio-economic characteristics of the both the participant and their family. The family of each participant was assigned to a socio-economic class using the modified recommended method by Oyedeji.[15] The occupation of the parents and their highest level of education were scored1 (highest) to 5 (lowest). The mean score for both parents was used to assign the family to a social class range of 1 – 5 range. Those with a mean score ≤ 2 were further reclassified into upper class, those with mean score of 3 were reclassified into middle class while those with mean score of 4 and 5 were reclassified into lower class.

Ethical approval and clearance were obtained from the Federal Medical Centre Research/Ethics Committee and the Ogun State Ministry of Education. Informed consent was obtained from the parent or guardian of each pupil in the primary schools and assent from each adolescent participant in secondary schools before they were allowed to participate.

Anthropometric Measurements

All anthropometric measurements were taken by trained student nurses. Each measurement was taken by the same examiner to minimize measurement error. The children were weighed using an electronic weighing scale calibrated in 100g units (SECA/UNICEF, Australia). All the children were weighed to the nearest 0.1kg in a private room, one at a time, wearing only underwear. The height was measured using a specifically-made wooden standiometer with a steel tape measure. This was done with the child standing erect without shoes and with the head on horizontal plane and the feet together on a horizontal level. These measurements were done to the nearest 0.1cm. Body mass index (BMI) was calculated by dividing the weight in kilogram with the square of height in metres. Standardization checks on the weighing scale and height boards were done by IOS after every 20 subjects during the study period.

Definitions

The National Centre for Health Statistics/World Health Organisation guidelines and cut-off points were used to determine the degree of underweight and stunting.[16] Underweight and

stunting were diagnosed when the Weight-for-Age Z-score (WAZ) and Height-for-Age Z-score (HAZ) were equal to minus two standard deviation (–2 SD) or below the mean of this reference international standards, respectively. Obesity prevalence was assessed using weight for age greater than 120 % of expected. The 50th percentile of weight for age in Harvard standard was taking as the expected weight for age.

Statistical Analysis

Data analysis was by descriptive and inferential statistics using SPSS for Windows software version 11. The means and standard deviations (SD) of the weight, height and body mass index were calculated by age groups and sex. Differences in mean between both sexes and between the index study and 1983 survey were compared using independent-sample t test and one-sample t test respectively. Proportions and ratios were compared using the Pearson Chi squared (χ^2) test. 'p' values of less than 0.05 were accepted as statistically significant.

RESULTS

In all, 630 pupils were selected but only 570 (90.5 %) pupils completed the study. The other 60 pupils were excluded based on refusal to participate and evidence of chronic diseases.

The mean age for male participants were 12.40 ± 3.29 years while mean age female participants were 11.9 ± 3.53 years. Two hundred and ninety-six (51.5 %) were males. The socio-economic distribution of the family of the participants are upper (166, 29.1 %), middle (304, 53.3 %), and lower (100, 17.5 %) social classes.

Table 1 shows the average values of the various anthropometric measures of the participants according to their age groups and gender. The mean weight (r = 0.85, p < 0.01), mean height (r = 0.88, p <0.01) and the mean BMI (r = 0.64, p < 0.0001) increased significantly with age. In the age group 10–14 years, the mean weight and mean BMI were significantly higher in female while in the age group 15–19 years, the mean height was significantly higher in males but the mean BMI was significantly higher in females (p < 0.0001). Tables 2 and 3 show the comparison of the mean height of male and female school children and adolescents in the current study with those reported by Akesode *et al* in 1983.[19] The mean heights of male participants at ages 9 and 16 years were significantly higher in the current study than the values reported in 1983 while those of subjects aged 13 years were significantly lower in the current study than the values reported in 1983. The mean heights of female participants who were 10, 11 and 12 years old were significantly lower in the current study than the values reported in 1983. Growth spurts were observed at the age of 11 years in males and 9 years in females in the current study. Tables 4 and 5 show the comparison of the mean BMI of male and female participants in the current study with the values reported in 1983. The mean BMI values were generally similar among males except for ages 8 and 14 years where the participants in the current study had significantly higher mean BMI values than those in the 1983 study. The mean BMI values for male participants who were 9 and 10 years old in the current study were significantly lower than the values reported in 1983. The mean BMI was significantly higher in seven-years-old females in the current study than in1983 while it was significantly lower in ages 9, 14, 18 and 19 years in the current

Table 1: Anthropooometric Indices of Subjects According to Age and Sex

Age groups (years)	Mean (SD)			
	No	Weight (Kg)	Height (cm)	BMI (Kg/m^2)
Males				
5 – 9	63	22.4 (3.45)	124.7 (7.53)	14.4 (1.27)
10 – 14	139	31.4 (6.47)	141.1 (9.97)	15.5 (1.55)
15 – 19	94	48.2 (9.52)	163.5 (9.90)*	17.9 (2.01)
Females				
5 – 9	84	21.7 (3.83)	123.8 (9.05)	14.1 (1.35)
10 – 14	106	34.6 (9.28)*	142.8 (11.8)	16.7 (2.89)*
15 – 19	84	48.4 (6.56)	157.1 (6.27)	19.7 (2.47)*

**P < 0.05 for sex difference in weight, height and BMI; BMI = body mass index.*

Table 2: Heights of Male Children in 1983 and 2006

Age (Years)	No. of Subjects 1983 : 2006	1983	2006	P value
6	25 : 10	115 (4.5)	117.5 (3.6)	0.055
7	17 : 15	122 (4.8)	122.1 (7.6)	0.973
8	12 : 14	124 (5.3)	127.1 (6.6)	0.105
9	13 : 22	126 (3.0)	129.4 (5.3)	0.007*
10	16 : 30	130 (5.2)	131.9 (6.0)	0.101
11	14 : 18	135 (6.8)	138.4 (7.5)	0.070
12	11 : 34	141 (6.5)	140.6 (6.6)	0.730
13	17 : 39	152 (6.6)	143.5 (8.5)	0.001*
14	12 : 18	153 (8.0)	154.9 (8.3)	0.340
15	19 : 29	158 (10.6)	156.0 (10.8)	0.334
16	18 : 32	164 (7.5)	165.9 (7.6)	0.001*
17	10 : 23	167 (7.7)	166.4 (7.0)	0.707
18	17 : 7	170 (3.6)	168.9 (6.1)	0.659
19	15 : 3	171 (5.4)	176.4 (6.0)	0.261

*Values are mean (SD). Height is cm *p < 0.05*

study than in 1983.

Table 6 shows the nutritional status of the participants by age groups and sex. The Weight-for-Age Z-score (WAZ) ranged from –4.93 to 1.92 while the Height-for-Age Z-score (HAZ) ranged from –4.32 to 3.18. The mean WAZ and HAZ were –1.28 ± 1.1 and – 0.86 ± 1.2, respectively. The prevalence of underweight in male and female participants increased significantly with age (χ^2 = 15.6, p = 0.001; χ^2 = 6.5, p = 0.039, respectively). The prevalence of stunting in male participants increased significantly with age (χ^2 = 7.7, p = 0.022). The overall prevalence of underweight and stunting were 24.7 % and 17.4 %, respectively.

Table 3: Heights of Female Children in 1983 and 2006

	Mean (SD) Height, cm		
	1983	2006	P value
Age (Years)			
6	116 (4.7)	115.7 (6.9)	0.900
7	122 (4.2)	122.3 (5.7)	0.833
8	124 (5.6)	122.4 (7.3)	0.275
9	129 (8.1)	131.0 (8.0)	0.200
10	135 (8.6)	130.4 (6.7)	0.008*
11	143 (6.3)	137.9 (8.0)	0.006*
12	154 (8.1)	140.5 (8.7)	0.001*
13	154 (6.6)	151.7 (9.0)	0.199
14	154 (4.3)	154.9 (8.0)	0.671
15	157 (4.6)	155.1 (6.3)	0.097
16	158 (5.5)	158.4 (6.2)	0.732
17	161 (6.6)	158.0 (4.8)	0.053
18	160 (5.8)	160.0 (7.1)	0. 923
19	158 (3.9)	156.5 (7.3)	0.710

*p < 0.05

Table 4: Body Mass Index by Age of Male Subjects in 1983 and 2006

	Mean (SD) BMI Kg/m^2			
	1983		2006	
Age (Years)	No. of Subjects 1983 : 2006			P value
6	25 : 10	14.0 (1.6)	14.0 (1.2)	0.977
7	17 : 15	13.7 (1.0)	13.9 (1.2)	0.462
8	12 : 14	13.6 (1.0)	14.9 (1.3)	0.002*
9	13 : 22	15.5 (0.8)	14.6 (1.3)	0.002*
10	16 : 30	15.5 (1.2)	14.8 (0.9)	0.001*
11	14 : 18	15.4 (1.2)	15.2 (1.7)	0.573
12	11 : 34	15.1 (0.8)	15.3 (1.1)	0.270
13	17 : 39	16.3 (2.5)	15.9 (1.8)	0.134
14	12 : 18	15.4 (2.1)	16.5 (1.8)	0.019*
15	19 : 29	16.2 (2.2)	16.6 (1.2)	0.099
16	18 : 32	18.2 (2.5)	18.4 (2.3)	0.577
17	10 : 23	18.0 (2.5)	18.3 (1.9)	0.464
18	17 : 7	18.4 (2.2)	19.1 (2.0)	0.397
19	15 : 3	18.9 (2.1)	17.9 (1.1)	0.239

*Values are mean (SD); BMI in Kg/m^2; *p < 0.05*

Using weight greater than 120 % of expected for age, 5 (1.7 %) males and 6 (2.2 %) females were obese compared with 3.3 % male and 5.1 % female children who were obese in 1983. The prevalence of overweight/obesity increased with age in female participants (p = 0.036). The prevalence was significantly higher among females in age groups 10–14 years and 15–19 years (χ^2 = 13.0, p = 0.005; χ^2 = 20.9, p < 0.0001 respectively). One hundred and sixty-three (28.6 %) children were underweight.

Of the 100 participants belonging to lower socio-economic class, underweight was observed in 32(32%) participants and overweight in 1 (1%) participants. Of the 304 participants belonging to middle class, underweight was observed in 84 (27.6%) participants and overweight in 6 (2.0 %) participants while of the 166 participants belonging to the upper class, underweight was observed in 25 (15.1 %) participants and overweight in 4 (2.4%) participants. These differences were statistically significant (p <0.01).

DISCUSSION

Like previous studies from Nigeria[13,17,18] and other developing countries,[3,10] the prevalence of underweight and stunting from this study was 3 to 5 times the rates for overweight and obesity. This finding further supports the view that malnutrition is still a major problem affecting children of developing countries. Malnutrition is associated with poverty, ignorance and risk of infectious diseases.[19] It accounts for the high childhood mortality and morbidity rates with consequent reduction in life expectancy rate, thus decreasing the number of children at risk of overweight and obesity.[20] The co-existence of malnutrition and overweight/obesity among the paediatric population of a developing country is considered a double burden.[21] Considering the magnitude of underweight and stunting in this study, high childhood mortality from malaria and other infectious diseases,[22] and scarce public health resources,[23] government may not be prepared to direct her limited resources to develop strategies to prevent childhood overweight and obesity.

Table 5: Body Mass Index by Age of Female Subjects in 1983 and 2006

	Mean (SD) BMI Kg/m²			
	1983		2006	P value
Age (Years)	No.			
6	17	13.9 (0.5)	13.3 (1.3)	0.182
7	8	13.4 (1.2)	14.2 (0.9)	0.008*
8	14	13.9 (0.7)	14.2 (1.0)	0.194
9	13	15.4 (1.8)	14.4 (1.7)	0.004*
10	25	14.7 (1.3)	15.6 (2.1)	0.094
11	13	15.2 (2.8)	15.9 (2.1)	0.145
12	17	17.0 (2.0)	16.9 (4.4)	0.946
13	30	18.5 (2.7)	17.8 (2.3)	0.137
14	24	18.8 (3.3)	17.4 (1.8)	0.011*
15	17	19.2 (2.3)	19.6 (2.5)	0.346
16	16	19.3 (2.2)	19.5 (2.6)	0.717
17	12	20.7 (1.5)	19.4 (2.6)	0.098
18	18	30.1 (2.7)	21.4 (1.3)	0.001*
19	13	22.1 (2.4)	18.0 (1.6)	0.014*

*Values are mean (SD); BMI in Kg/m²; *p < 0.05*

Table 6: Nutritional Status of Study Subjects by Age Group and Sex

Year	5 – 9		10 – 14		15 – 19	
	Male	Female	Male	Female	Male	Female
Weight-for-Age Z-score						
< –2 SD	6(9.5)	15(17.9)	49(35.3)	28(26.4)	33(35.1)	10(11.9)
> –2 SD	57(90.5)	69(82.1)	90(64.7)	78(73.6)	61(64.9)	74(88.1)
Height-for-Age Z-score						
< –2 SD	4(6.3)	13(15.5)	29(20.9)	19(17.9)	21(22.3)	13(15.5)
> –2 SD	59(93.7)	71(84.5)	110(79.1)	87(82.1)	73(77.7)	71(84.5)

NB: Figures in parenthesis are percentages of the total number of children in the respective column

Consequently overweight and obesity trends may continue to grow unchecked up to an alarming rate similar to the rates reported in South Africa[9] and other developing countries.[3, 10] Since under-nutrition and overweight obesity are extremes of abnormal nutrition, we suggest that Nigerian government should address problem of nutrition in a holistic manner with a global strategy and public health campaign.

The prevalence of obesity of 1.7% male and 2.2% in female school children and adolescents are lower than the 2.3 to 4% reported in Calabar, Eastern Nigeria[17] but higher than 0.2% reported in Lagos.[18] The differences in these rates might have resulted from the different methods used to determine overweight and obesity.[24, 25] Ethnic differences has been[9] to influence the prevalence rates of overweight and obesity in children. The majority of the participants in the current study were of the Yoruba tribes compared with those reported in Calabar,[17] who were predominantly Ibibios. Family dietary patterns in Nigeria and other African countries[26] vary from one ethnic group to another and may have contributed to the different prevalence rates of overweight and obesity reported among paediatric population in Nigeria.

When the prevalence of overweight and obesity in the current study was compared with the values reported by Akesode *et al* in 1983,[13] the rates were lower in the current study but were not significantly different. Thus, our initial hypothesis that urbanization, industrialisation and increased demographic trends in Abeokuta, and possibly, changes in lifestyles of the inhabitants would increase overweight and obesity trends among the school children and adolescents was not supported by the results of the current study. However, a periodic study coupled with preventive strategies may be necessary to prevent childhood overweight and obesity in Abeokuta from rising to an alarming rate which may eventually become a public health problem as it is presently experienced globally.

The prevalence of overweight and obesity in the current study was found to be higher among older children and adolescents, similar to the reports from a study in Taiwan.[27] Younger children in developing countries are likely to be protected from becoming overweight and obese during childhood largely because this age group are affected mainly by problems and sequelae of under-nutrition.[26] The male children, aged 10–14 years and female children, aged 8–12 years in Taiwan had been reported to have a high rate of overweight and obesity probably as a result of the effects of gonadal hormones on their body and physical maturation.[27] There appears to be a trend towards earlier maturation of the participants in the current study when compared with similar participants studied by Akesode et al in 1983[13] as evidenced by adolescent growth spurts shift from 11 to 9 years in females and from 12 to 11 years in males. After attaining the adolescent growth spurt's age, children generally grow in weight faster than height with increase in body mass, fat-free mass and fat mass.[27]

The prevalence of overweight and obesity, like in many other studies from Nigeria[13, 17, 18] and India,[28] was higher in females than males. This may be partly explained by the frequent desire of African females to be fat as this is often viewed as sign of wealth and happiness, and cultural symbol of beauty, fertility and prosperity in African.[26, 29] Parental preference for male children is high in many African countries[30, 31] and India.[32] In spite of this gender preference, some

parents tend to be more solicitous of female children and are more biased for a high female childhood ratio.[33] This may be as a result of the dowry exchange at the time of marriage of the female children; a much valued tradition particularly in northern Nigeria. Female children are therefore likely to be fed with more food portions or enjoy autonomy for food preference than male children. An overfed child has the tendency to be overweight or obese. Among a black population in America, more adolescent females than males were reported to be inactive and more prone to becoming overweight and obese.[34]

While under-nutrition was seen in most of the participants from low socio-economic class, overweight was commoner among the upper social class than the lower class. A similar trend has been reported from South Africa,[35] Egypt[36] and other developing African countries[3,10] where overweight and obesity were found to be more prevalent among children from high socio-economic class. However, this finding is in contrast to the high prevalence of overweight and obesity among children from low socio-economic class in developed countries.[6-8] Thus dietary pattern and environmental factors are strong determinants of childhood overweight and obesity.

Limitations

The limitations of this study include the use of international BMI percentile classification in this study which may not be appropriate since it was specifically designed for developed countries where under-nutrition is not a problem. There is therefore a need to develop a national BMI classification for paediatric population in Nigeria and other African countries. Lack of database for anthropometric measurements of pre-school children has made it impossible for us to study the same cohort of children like other studies that have established the trends of overweight and obesity among school children.[6-8] Another limitation is that we did not assess the dietary intakes of these children as obesity represents a balance between energy intake and expenditure.

Conclusion

Under-nutrition is still a prevailing childhood health problem in Abeokuta. The provision of free school meals for children would guarantee at least one balanced diet per week-day for these children and improve their growth. Other inexpensive, simple to deliver, health promoting and intervention measures such as periodic treatment of worms, micronutrients supplementation and participatory health education should form part of the school health services which should be encouraged. The double burden of under-nutrition and overweight/obesity among the paediatric population in Abeokuta would require a holistic approach by the government to address the problem of nutrition among children. It is hoped that our data will serve as basis for intervention in nutritional problems of school children and adolescents as well basis for comparison with other studies in future.

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