

ANTHROPOMETRIC EVALUATION AND FOOD HABIT OF SCHOOL AGE CHILDREN IN LAGOS, NIGERIA

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ABSTRACT

Nutrition has a very significant influence on health and development throughout a person's life. Guiding children on a path to healthy living through their diet will ensure that school age children grow and develop normally. This study assessed the nutritional status of school age children and evaluate their feeding habit, using the cross-sectional, descriptive approach, in which 200 school-aged children from four public primary schools in Eti-Osa Local Government Area, Lagos State participated in the study. Self-administered questionnaire and anthropometrics measurements were used to asses' nutritional status. Data was analyzed with Statistical Package for Social Sciences (SPSS) software Version 20 using descriptive statistics. The study showed that 34% of the school age children were normal for their weight and 24% were normal for their height using NCHS standard. Results also showed that (59.5%) were underweight (6.5%) were overweight and (74%) stunting. The eating habits of the respondents include skipping meals (66.5%), snacking (16%). The most popular starchy foods among school aged children in this study is Noodles and Rice which was taken more than once a day by the respondents (30%) and (36%) respectively and daily by (35%) and (39%) of the respondents respectively. Meat/Fish and Egg were also consumed daily (36.3%) while fruits and vegetable were consumed once in a week. There is a high degree of malnutrition among the school aged children. The school aged children, mostly consumed starch (noodles and rice), less than half of the respondents consume meat, fish or egg daily and fruits and vegetable which are essential sources of nutrients. Therefore, nutrition education should be given both in the family and at school in order to draw attention of parents on how to choose the essential diet from locally available food sources. Government should provide free homegrown school meals to provide at least one third of the energy required per day for school aged children to alleviate malnutrition.

Keywords: Stunting, Underweight, Overweight, Starchy Food, Habit, School Age Children.

INTRODUCTION

School - aged children (ages 4-12) continue to need healthy foods and nutritious snack. They have a consistent but slow rate of growth and usually eat four to five times a day (including snacks). Many food habits, likes and dislike are established during this time. Family, friends and media (especially television) influence their food choices and eating habits (Adolphus, Lawtson & Dye, 2013). A review of nutrition and school performance suggests that children who go to school without breakfast are likely to be more inattentive, lethargic and irritable, but there has not been strong documentation to support this association (Akinpelu, Oyewole, Odele & Tella, 2014). The authors also reported in their study that snacks are commonly consumed by school children, primarily after school and in the evening. Bakery products and soft drinks are the most frequently chosen snacks. As a child grows older and has money to spend, he or she consumes more snacks outside the home. Vending machines in school or other public places tend to offer soft drinks, candy and packaged baked goods. Human nutrition is governed by many factors like food habits and behaviour, food belief, religious factor, sociological factor and income also the benefits of good nutrition are good health, happiness, efficiency and longevity (Akinpelu, Oyewole, Odele & Tella, 2014). The health of school-aged children today, as revealed in national surveys, in United State of America, is generally excellent. Children in poverty groups tend to be at higher risk of inadequate nutrient intakes and poor growth, but even these groups in their general status is

good. Dietary deficiency diseases are rare. Vitamins or Mineral supplements do not produce biochemical or functional improvements; therefore, vitamin and mineral supplementation is not recommended except for high risk children such as those from very poor families, those with poor appetites and eating habits, and those who are ill (National Health Survey of Children's Health, 2013).

Lawal and Samuel (2010) reported in their study that Children need more nutritious food in proportion to their weight than adults, this is because they are growing and developing bones, teeth, muscles and blood. However, they become at risk for malnutrition because of prolonged appetite, acceptance of a limited number of foods or dilution of their diets with nutrients poor foods and thus determine their food intake and habits. This condition may be due to numerous influences, some obvious and some subtle; the major influence on food intake in the developing years, including family environment, the media, peers or significant adult (e.g. teachers or sports idols) illness and disease. The energy needs of a child are determined by his or her basal metabolism, rate of growth, body size, age and activity. Enough calories must be provided to ensure growth and to spare protein from being used as energy, yet they can be so excessive that obesity results. Of the total energy intake, a suggested proportion is 50-60 percent as carbohydrate, 25 to 35 percent as fat and 10 to 15 percent as protein (FAO, 2015). School aged children need an adequate protein intake to cover maintenance needs and to provide for optimal growth. The Recommended Dietary Allowances (RDAs) indicate that the need for protein per kg body weight decrease from approximately 1.8gm in early children to 1.2gm in late childhood. These protein needs can be met by a combination of plant and animal foods such as cereal with beans or lentils, cereal with nuts, seeds or milk and other dairy products, which provide the right balance of protein (World Health Organization, 2015).

School - age children of 8 years and above have good cognitive knowledge of nutrition both with respect to avoiding deficiency diseases and diet-related chronic degenerative diseases and obesity, however, their food choices are not in line with this knowledge or with expert recommendation. Moreover, the poor choices of food are due in part to not knowing the nutritional value of some food, or which choices is more appropriate. Social pressures, advertising and personal preference also play a role in their food habit. They enjoy eating snacks out of doors to alleviate hunger and obtain social satisfaction (Food Nutrition Bull, 2014). These habits not only lead to an unbalance diet but are also liable to play a destructive role in the promoting of dental carries and other health problems. Skipping of breakfast is another habit that is common with school aged children the habit of missing meals and their replacement by frequent snacking is another concern, due to the influence of take-out foods and fast food (Abtahi, Abdollahi, Amini, Dakhab & Pouraam, 2015). Lyttle, Eldridge, Kotz, Pipers, Williams and Kalina (2011) reported that skipped meals, poor lunches, snacking in between, munching in between, consuming large quantities of soft drink and salty tit bits which reduces appetite, are the common unhealthy dietary habits, observed among school aged children.

In developing nations, there is double burden of under nutrition and over nutrition. (Warraich, Jared, Faraz-ul-Haq, Khawaja & Suleem, 2009; WHO, 2012) This has been attributed to westernization and reduced level physical activities in those nations. There is transition from predominantly high prevalence under nutrition, (stunting, wasting, underweight, thinness and overweight). Medhin, Haulon, Dewey, Alem, Tesfaye and Worku (2010) stated that in Ethiopia prevalence of infant under nutrition was high 6 months 21.7% underweight, 26.7% stunted and 16.7% wasted. At 12 months age 21.2%

underweight, 48.1% stunted and 8.4% wasted. In Burkinafaso stunting 8.8%, thinness 13.7% (National Health Survey of Children's Health, 2012). Olack, Burke, Cosmas, Bamrah, Dooling and Breiman (2011) also reported in Kenya that stunting 47.0% 11.8% underweight, 2.6% were wasted. Severe stunting, wasting, underweight is 23.4%, 0.6% and 3.1%. In Lagos State Ojo local Government Area ages 1 to 10 years, among school age, the result shows that boys were more stunted, overweight and underweight than girls (UNICEF/WHO, 2015) Therefore, the objective of this study is to assess the food habits and nutritional status of school age children in Eti-Osa Local Government in Lagos State, Nigeria.

MATERIALS AND METHODS

The design used for this study is cross-sectional, descriptive. The study was conducted in Eti-Osa, one of the local governments in Lagos State, Nigeria. Within Eti-Osa, there are several important areas of Lagos, including Victoria Island and Lekki. The Local Government has fifteen public secondary schools and twenty-eight public primary schools, while several private day-care centres, Nursery, Primary Secondary and tertiary institution are located at various parts of the Local Government. The Local Government has many Primary Health Centers (PHC) while several private hospitals and medical centers complement the efforts of the Government. Five primary schools were randomly selected among the twenty-eight primary schools in Eti-Osa Local Government. All five schools agreed to participate in the study. The pupils in primary one and two were the study sample from each school. The schools are: Badore Primary School, Sangotedo Primary School, Dairy farm Ikota Primary School, Mayegun Primary school and Ireti Primary School. Forty pupils from each

school were selected through convenient sampling technique with the assistance of their teachers, making a total of 200 samples.

Data was collected using Anthropometric measurements and questionnaire. Anthropometric measurements were taken for the entire subject selected in each school. This was done to assess the nutritional status of the school age children and measurements that were taken include height and weight. The subjects were weighted in their uniforms (Light clothing), without shoes, socks and caps. Height measurement was used to assess their vertical dimension using a calibrated wood - height scale, with each pupil made to stand uprightly with barefoot, put together and the forehead leveling up with the height measuring scale. Height was taken in centimeters and weight in kilograms. The questionnaire was adapted from Phellas, Blechi & Seale, (2012). The permission to carry out this study was sought from the local government education department. Consent was directly obtained from their class teacher and the pupils verbally; no names were recorded on the questionnaires. Questionnaire were administered to the respondents with the assistance of their class teachers, to elicit information on demographic data, food consumption pattern, food frequency table, parent's socio - economic characteristics and attitude towards nutrition and health. Data was analyzed using descriptive analysis consisting of frequency and percentage. The result obtained was compared with the National Council for Health Statistics Standard as follows: <10th percentile- Severely underweight/stunted, 10-25th percentile - Underweight/Stunted, 25th -75th percentile -Normal, 75th - 90th percentile - Malnourished, >90th percentile - Severely malnourished.

RESULTS

Table 1 showed a total of 200 school aged children were enlisted in the study. Demographic characteristics of school aged children were as follows: 47.0% of the children were 6 years, Majority of the respondents were female (51.0%) while a higher percentage of

the subject was from a Christian family (58%). Most of the respondents (45.5%) came from monogamous family. The majority of the studied population came from a family that had between 5 to 7 children (63%). The majority of the respondents falls on position between 1st and 4th (78%) in their family.

Table 1:
Demographic Data of Respondents

Variables	Category	N	%
Age	4	14	7.0
	5	77	38.5
	6	94	47.0
	7	10	5.0
	8	5	2.5
	Total	200	100
Sex	Female	102	51.0
	Male	98	49.0
	Total	200	100
Religion	Christianity	116	58.0
	Islam	82	40.5
	Traditional	2	1.0
	Total	200	100
Family Type	Extended	27	13.5
	Monogamous	91	45.5
	Polygamous	82	41.0
	Total	200	100
Number of children in the Family	1 -4	52	26.0
	5 -7	126	63.0
	8 -10	17	8.5
	11 and above	5	2.5
	Total	200	100
Birth Order	1 st - 4 th	156	78.0
	5 th and above	44	22.0
	Total	200	100

Table 2 revealed that 13.5% of fathers and 26.5% of mothers had informal education while 16% of fathers and 23.5% of mothers had primary education. 36% of fathers and 34% of mothers had secondary education, while 27% of fathers and 9.5% of fathers has tertiary

education. Lastly, only 7.5% of fathers and 6.5% of mothers had post-tertiary education.

The father's occupations were mostly civil servant (34.5), private worker (30.5%) and trading (36.5%) while that of the mothers were trading (75.5%), artisan (11%) and farming (8.5%).

Table 2:
Socio-Economic Characteristics of respondents

SEC	Father		Mother	
	N	%	N	%
Informal Education	27	13.5	53	26.5
Primary Education	32	16.0	47	23.5
Secondary Education	72	36.0	68	34.0
Tertiary Education	54	27.0	19	9.5
Post Tertiary Education	15	7.5	13	6.5
Total	200	100	200	100
Occupation				
Artisan	12	6.0	22	11.0
Civil servant	69	34.5	10	5.0
Farmer	53	1.5	17	8.5
Private worker	61	30.5	1	0.5
Trading	53	26.5	150	75
Total	200	100.0	200	100.0

Table 3 revealed that majority (59.5%) were underweight. Twenty-six (26%) of the respondents have normal height for their age, while 74% were stunted. It also showed that for

age 4 out of 14 pupils studied 8 were stunted (5 female 62.5% and 3 male 37.5%) while 6 were normal (4 female 66.7% and 2 male 33.3%) respectively.

Table 3:
Weight for Age of the pupils

	N	%
Under - weight	119	59.5
Normal	68	34.0
Over - weight	13	6.5
Total	200	100.0

Table 4 observed that for age 5, out of 77 pupils studied 56 were stunted (33 female 58.9% and 23 male 41.1%) while 29 were normal (10 female 47.6% and 11 male 52.4%) respectively. For age 6, out of 94 pupils studied 73 were stunted (35 female 47.9% and 38 male 52.1%) while 21 were normal (8 female 38.1%

and 13 male 61.9%) respectively. For age 7, out of 10 pupils studied 7 were stunted (4 female 57.1% and 3 male 42.9%) while 3 were normal. For age 8, out of 5 pupils studied 4 were stunted (2 female 50% and 2 male 50%) while 1 female was normal.

Table 4:
Cross tabulation of Height for Age between sexes

Age of child		Sex of child		Total
		Female	Male	
Age 4 status	Height for Age Stunted status	5 (62.5)	3 (37.5)	8 (100)*
	Normal	4 (66.7)	2 (33.3)	6 (100)
	Total	9 (64.3)	5 (35.7)	14 (100)
Age 5 status	Height for Age Stunted status	33 (58.9)	23 (41.1)	56 (100)
	Normal	10 (47.6)	11 (52.4)	21 (100)
	Total	43 (55.8)	34 (44.2)	77 (100)
Age 6 status	Height for Age Stunted status	35 (47.9)	38 (52.1)	73 (100)
	Normal	8 (38.1)	13 (61.9)	21 (100)
	Total	43 (45.7)	51 (54.3)	94 (100)
Age 7 status	Height for Age Stunted status	4 (57.1)	3 (42.9)	7 (100)
	Normal	0	3 (100)	3 (100)
	Total	4 (40)	6 (60)	10 (100)
Age 8 status	Height for Age Stunted status	2 (50.0)	2 (50.0)	4 (100)
	Normal	1 (100)	0	1 (100)
	Total	3 (60.0)	2 (40.0)	5 (100)

*percentages are written in parenthesis

Table 5 reveals that respondents consumes cereals and starchy food mostly alternate days (25%) daily (21%) and once in a week (20.8%). But, "Noodles and rice was eaten every day (Table 6), Meat/Fish and egg group was taken daily 36.3%. Legume group was taken mostly

once in a week (19.8%). Milk and its products were also taken daily (57%) while majority takes on alternate days 61.5%. Snacks and Sweets are mostly taken occasionally. Fruit and vegetables are consumed weekly, 26.3% and 24.6% respectively.

Table 5:
Food Habit of the Pupils

		N	%
Regular meal consumed	One	12	6.0
	Two	19	9.5
	Three	139	69.5
	More than three	30	15.7
	Total	200	100
Frequency of Skipping meal	Breakfast	70	52.6
	Lunch	42	31.6
	Dinner	21	15.8
	Total	133	100.0
Regular meal consumed	Two	19	9.5
	Three	139	69.5
Those who skip meals	Yes	133	66.5
	No	67	33.5
	Total	200	100.0
Buying cooked food	Yes	151	75.5
	No	49	24.5
	Total	200	100.0
Frequency of Buying meals	Everyday	34	22.5
	Frequently	62	41.1
	Occasionally	55	36.4
	Total	151	100.0
Meals bought	Breakfast	56	37.1
	Lunch	90	59.6
	Dinner	5	3.3
	Total	151	100.0
Food they buy	Cooked food	158	79.0
	Snacks	32	16.0
	No money giver	110	5.0
	Total	200	100.0

Table 6 shows that eating habit of school aged children shows that, 69.5% ate 3 regular meals daily and 6.0% took only one meal daily. A greater percentage of the subject (66.5%) skipped meal and meal mainly skipped was breakfast 52.6%. Majority of the respondents

buy cooked food (75.5%) and meal that was bought mostly was lunch 59.6% which was done frequently (41.1%). Thus reveals that 79% of the respondents buy cooked food while 19% snacks and 5% were not given money at all.

Table 6:
Frequency of Consumption of Food in Percentage (%)

Foods	More than once a day	Daily	Alternate day	One in a week	Occasionally	Rarely	Never	Total
Cereal starchy food	14.6	21.0	25.0	20.8	6.2	6.0	7.4	100.0
Meat/Fish product	14.4	36.3	10.9	8.5	16.9	6.8	6.2	100.0
Legumes	13.0	13.7	18.0	19.8	8.8	11.5	16.8	100.0
Milk & Milk Product	112.5	45.0	30.8	25.0	24.0	4	2.5	100.0
Snacks	8.0	18.1	16.0	22.4	24.5	7.5	2.4	100.0
Fruits	9.5	18.2	16.3	26.3	22.8	6.0	0.5	100.0
Vegetable	3.8	8.2	19.4	24.6	19.6	15.3	9.2	100.0

DISCUSSION

The ages of the subjects were between 4 and 8 years, and most of them came from a monogamous family that can be linked up with the religion they mostly practice, Christianity. There was a high level of literacy among the parents of respondents this can be attributed to the fact that Eti-Osa is an urban area. Most of the residents are Civil Servants who are expected to possess minimum level of education. Most of the respondents (69.5%), consumed 3 meals a day, 66.5% of the subjects skipped meals. The most common skipped meal was breakfast (52.6%).

Using the food frequency table, school aged children take high amount of cereals and starchy roots alternate days and once in a week. Also, they consume average amount of fruits and leafy vegetables.

The eating habits of the subject studied were not influence by peer group.

With the use of National Council for Health Statistics (NCHS) study shows that the prevalent rates of underweight, stunting and over weight of respondents aged 4-8 were 60%,

74% and 6.5% respectively. The study prevalence is comparable to 61.2%, 16.8% and 27.6% respective overall prevalence rates of underweight, weighted and stunting found in a 2006 comparative study of nutritional status of urban and rural Nigerian school children aged 5-10years. It is also comparable to 35% prevalence of malnutrition found in a study conducted among children aged 2-5 years in district Swabi (NWFP) Pakistan using the WHO growth standard classification based on weight for age (Khankhattak & Shab, 2010). Similarly, high prevalence of malnutrition has been observed among school - age children in low-income developing countries such as India and Indonesia (Srivastava, Mahmood, Srivastava, Shrotriya & Kumar, 2012).

The Nigerian Food Consumption and Nutrition Survey (2001-2003), provide data only for children less than five years of age. The national data showed that 42% of the children were stunted, 25% were underweight and 9% were weighted, this study's figures in broad terms indicate a continuation of these level of malnutrition in older children as well as would suggest that malnutrition in under-fives does

not disappear magically when children cross the critical threshold of 5 years. Indeed, older children in the study were more likely to be malnourished than younger ones.

Generally, children below the age of five are considered to be a nutritionally vulnerable group, older school - aged children may be as nutritionally vulnerable. This will ultimately affect their development and academic performance (Srivastava, Mahmood, Srivastava, Shrotriya & Kumar, 2012).

CONCLUSION AND RECOMMENDATIONS

The study revealed that majority of the children was underweight according to the NCHS standards. The school children skip meals especially breakfast. The diet of the children consisted mostly of starchy roots and cereals while the consumption of fruits and vegetables was low.

The study also shows that malnutrition (underweight, wasting and stunting) constituted major health problems among school children in Eti-Osa local government area of Lagos State, Nigeria

It is recommended that, regular nutritional and growth assessment should be an integral part of the management of school age children and commencement of appropriate nutritional intervention programmes in our primary schools in Nigeria. Also, government should provide free home-grown school meal to provide at least one third of the energy required per day for school aged children to alleviate malnutrition. The use of Centre kitchen system should be reintroduced in public schools, good practices for school health and nutrition programmes should be identified to develop coordinated and unified nutrition education messages and to develop coherent school health and nutrition policy. Nevertheless, the state committee on food and nutrition (SCFN)

should promote these developments for its effectiveness and efficiency.

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