

Assessment of Nutritional Status of Primary School Children in Jos-North

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Abstract- Background- Good nutrition is key to good health, survival and development of current and succeeding generation. Nutrition during developmental stage has been shown to induce long-term effects on later health which has an impact on growth, cognitive development and school performance of a child.

Objective- This study aimed to assess the nutritional status of primary school pupils.

Method- A Descriptive Cross-Sectional design was used to assess the nutritional status of pupils between the age of 5-15 years in 2 selected public primary schools. The data was collected with the use of a demographic questionnaire, weighing scale, meter rule and mid-upper arm circumference measuring tape. Data was analyzed using WHO Anthroplus and SPSS version 25.

Results- Findings indicates that majority of the pupils 83(55.3%) were males, age group of 9-12 years were (56.0%), those who were living with their parents were 82.7%. Most (99.3%) of the pupils eat before leaving for school and after school, using mid-upper arm circumference 99.33% were well nourished, 70% have normal BMI, 25% thinness, 3.3% overweight, 1.3% obese, 18.66% were severely stunted, 26% were stunted.

Conclusion- This study shows primary school pupils had good nutritional status as more than half were well nourished and had normal BMI value, although there was stuntedness, severe stuntedness and underweight among participants. We suggest effective infection control, extension and sustenance of home-grown school feeding program to all primary school children and monitoring of school children nutritional status.

Index Terms- nutritional status, primary school pupils, BMI, school feeding programme, Mid upper arm circumference, anthropometrics, North-central, Nigeria.

I. INTRODUCTION

Adequate nutrition is one of the most basic needs of

humans; good nutrition is the key to good health, survival and development of current and succeeding generation. Thus, adequate nutrition can be considered a fundamental right of every human being (Ukegbu, 2015). Breakfast skipping is common among school children for many reasons such as lack of food and time to consume what is available. The school period lasts 6 – 8 hours daily and people who fail to receive adequate nutrition both in quantity and quality will suffer from hunger, and also, prolonged hunger or insufficiency of nutrient intake leads to malnutrition according to Ugochukwu et al (2011). Healthier and better-nourished children stay in school longer, learn more and later become healthier and more productive adults.

Malnutrition is still a global health problem especially in developing countries with children being the most affected, its impact on children particularly those in the early stage of education can lead to physical impairment such as stunted growth, low performance in school as well as intellectually, increase health care cost, lower birth weight in the next generation, reduce productivity and slows economic growth. In Nigeria, it is believed that up to 2 million children are malnourished (Ebuka, 2018). The future generation of any country is the children and the nutritional needs are critical for the benefit of society. The National Home-Grown School Feeding Programme (NHGSFP) started in 2016 in Plateau State and so far, 4600 public primary schools in Plateau State have benefited (Action Health Incorporated, 2018). Apart from contributing to a child's daily nutrient requirements, meals provided during school hours alleviate short term hunger, increase attention span, facilitate learning and obviate the need for children to leave school in search of food (Ukegbu, 2015).

The assessment of nutritional status in children/adolescents particularly for the poor and unprivileged, helps in monitoring the health of a community/country, in planning and implementing programmes to reduce malnutrition. There are various ways in which nutritional status can be assessed; they include anthropometric measurement, dietary assessment, clinical assessment, and biochemical or laboratory tests. The anthropometric method of assessment includes human body measurements; it can be done by the following: body mass index and mid-upper arm circumference (Upadhyay, 2017). Anthropometric measurement is the single most inexpensive, non-invasive and universally applicable method (Omobuwa, et al., 2014), it classifies individuals into nutritional categories according to body mass index (BMI kg/m) such as stunted, normal weight, underweight, overweight, and obese. the mid-upper arm measurement assesses for nourishment.

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II. METHODOLOGY

A cross-sectional descriptive design was used to assess the nutritional status of primary school pupils. The study was conducted in Jos North Local Government of Plateau State consisting of 37 public primary schools under the school feeding programme. The Local Government consists of Christians and Muslims and the population is predominantly Berom, Affizere, Miango, Anarguta and Hausa/Fulani tribe and other tribes like Mwughavul, Ngas, Ron, Igbo and Yoruba. The majority of the people are peasant farmers and traders with some civil servants. The target population of the study is the primary 1, 2 and 3 pupils of Baptist Park primary school, and Islamia pilot primary school with a total population of 1504 pupils within the age range of 5-15years. A multi-stage sampling technique was conducted to select 2 schools from 37 public primary schools in Jos-North LGA of Plateau state under the feeding programme. Purposive sampling was used to select primary 1-3 because they were the only classes captured in the school feeding programme. Twenty-five pupils were selected per class in each school and 150 questionnaires were administered. The data were collected using a self-developed questionnaire and anthropometric data of the pupils which include weight, height, Body Mass Index (BMI) and Mid-Upper arm circumference (MUAC). Inclusion criteria include children in primary 1-3, age 5-15years, must be under the Nigeria government school feeding plan in Jos-North for 6 months

and above, their Parent/Guardians give consent to participation, Pupils are willing to participate and were present during data collection. The criteria for exclusion include Pupils who are not in primary 1, 2 and 3, not within the ages of 5-15 years, not willing to participate, and their Parents/Guardians did not give consent to participation.

During this study, permission was sought from the various school authorities through the principal of the schools and parents. Children’s ages were gotten from both the school register and their guidance. Pupils were weighed with light clothing without shoes on a scale to the nearest 0.1kg. Heights were measured with pupils standing barefooted using a constructed vertical wooden meter rule with graduations and readings were taken to the nearest 0.1cm. Data was analyze using WHO Anthroplus and SPSS version 25. All information obtained was treated and handled with maximum confidentiality.

Rating of measurement:

Mid-upper arm circumference: 13.5cm to17.5cm indicates normal, 12.5cm to 13.4cm indicates mildly malnourished and 7.5cm to12.4cm indicates severely malnourished.

Weight and Height: WAZ < -2 underweight, HAZ < -2 stunted, BAZ < -2 thinness, BAZ > 1 overweight and BAZ > 2 obesity.

III.RESULTS

Table 1: Socio Demographic Data

S/N	ITEM	FREQ	%
1	Sex		
	Male	83	55.3
	Female	67	44.7
	Total	150	100
2	Age in years:		
	5-8	51	34.0
	9-12	84	56.0
	13-15	15	10.0
	Total	150	100
3	Class (primary)		
	1	48	32.0
	2	53	35.3
	3	49	32.7
	Total	150	100
4	School		
	Isalamia school	75	50
	Baptist Park school	75	50
	Total	150	100
5	Religion:		
	Christian	50	33.3
	Muslim	99	66.6
	Others	1	0.7
	Total	150	100
6	How many are you in your family?		
	1-5	24	16.0
	6- 10	91	60.7
	11- 15	24	16.0
	16-20	11	7.3
	Total	150	100
7	Who are you staying with?		
	Parents Mother, and father	124	82.7
	Mother	10	6.7
	Father	6	4.0
	Guardian relation	10	6.7
	Total	150	100

8	What is your parent/guardian occupation?		
	Civil Servant	9	6.0
	Farming	8	5.3
	Trading	55	36.7
	Others	78	52.0
	Total	150	100
9	How many children does your father have?		
	1-3	24	16.0
	4-6	66	44.0
	7 years and above	60	40.0
	Total	150	100
10	Do you usually take breakfast before leaving home in the morning?		
	Yes	149	99.3
	No	0	0
	Sometimes	1	0.7
	Total	150	100
11	Do you eat when you return home after school?		
	Yes	146	97.3
	No	3	2.0
	Sometimes	1	0.7
	Total	150	100

Table 1 shows that majority of the pupils 83(55.3%) were males while females were 67(44.7%) with 51(34.0%) between the age group 5-8 years, 84(56.0%) between 9-12 years and 15(10.0%) within the age range 13-15 years. Forty-eight (32.0) were from class 1, 53(35.3%) from class 2, 49(32.7%) from class 3. Almost all the children, 149(99.3%)

pupils normally eat breakfast before leaving home in the morning, 1(0.7%) respondent indicated that they sometimes before going to school. Majority 146(97.3%) of pupils normally eat food when they returned home from school, 3(2.0%) said they do not normally eat and 1(0.7%) sometimes eat when they return home from school.

Table 2: Mid-Upper Arm Circumference

S/N	(>17.5cm)	Normal (13.5-17.5cm)	Mildly malnourished (12.5-13.4cm)	Severely malnourished (7.5-12cm)	Total
Fre	89	60	0	1	150
q.					
%	59.33	40	0	0.6	100

Table 2 shows that 89(59.33%) pupils have a MUAC greater than 17.5cm, 60(40%) were healthy, 1(0.6%) was severely malnourished and none was malnourished.

Table 3: Height - for Age

	Severely stunted growth (<-3)	Stunted growth (<-2)	Normal growth (>-1)	Total
Fre	28	39	83	150
q.				
%	18.66	26.0	55.33	100

Table 3 shows that 83(55.33%) pupils had normal growth, 39(26.0%) stunted while 28(18.66%) were severely stunted.

Table 4: Weight - for Age

	Underweight (<-2)	Healthy weight (>-2)	Total
Fre	64	86	150
q.			
%	42.67	57.33	100

Table 4, shows that 64(42.67%) pupils were underweight while 86(57.33%) were not underweight.

Table 5: Body Mass Index - for age

S/N	Thinness (<-2)	Normal weight (-2 to 1)	Overweight (1.01-1.9)	Obesity (>2)	Total
Fre	38	105	5	2	150
q.					
%	25.33	70	3.3	1.3	100

Table 5 on BMI shows that 105(70%) had normal BMI, 38(25.33%) children were thin, 5(3.3%) were overweight and 2(1.3%) were obese.

Table 6: Pearson Correlation analysis of Nutritional Status

	Weight- for -age	Height -for -age	BMI-for-age
Weight- for -age	1	0.137	0.773
Height -for -age	0.37	1	0.017
BMI - for – age	0.773	0.017	1

Table 6 shows that weight for age has a weak correlation with height for age and a strong correlation with BMI; height for age has a moderate correlation with weight for age and poor correlation with BMI; while BMI has a strong correlation with weight for age and poor correlation with height for age.

IV. DISCUSSION

Regarding Mid-upper Arm Circumference, findings indicate that majority 99.33% of pupils were well nourished having diameter greater than 13.5cm, with 60 (40%) among the nourished being healthy, only one (0.6%) pupil was severely malnourished and none was malnourished in contrast to (Akram et al., 2017). This could be due to school feeding programme which has likely improved the nutritional status of the children.

According to Body Mass Index, most (70%) pupils were within normal range similar to (Słowik et al., 2019), 3.3% of them were overweight and 1.3% obese similar to (Ejekwu et al, 2012), less than found (Słowik et al., 2019), similar to Banstola and Acharya (2015), slightly higher than (Anurang et al., 2012; Kpurkpur et al., 2017), higher than the value found (Chataut, et al. 2016; Nwamara et al., 2015h). not similar with underweight found (Kini et al., 2016; Nwabueze et al., 2015; Akanbi, 2014; Yankanchi, et al, 2018; Akram et al., 2017). Over 25% of pupils in this study were thin higher than found by Roy et al., (2016). Pupils who were underweight fall within the age range 5-8 years. Nutritional status could be attributed to difference in time interval of studies, increased knowledge and nutritional interventions.

It was found that most of the pupils 55.33% had the normal height for age while 26% had stunted growth and 18.66% were severely stunted similar to (Modjadji & Madiba, 2019; Nwamara et al., 2015), less than found in the study conducted (Anurang et al., 2012; Chataut, et al, 2016; Von et al., 2019; Banstola & Acharya, 2015; Yankanchi, et al, 2018; Kpurkpur et al., 2017; Kini et al., 2016). Weight for age has a weak correlation with height for age and a strong correlation with BMI, height for age has a moderate correlation between with weight for age and poor correlation with BMI while BMI has a strong correlation with weight for age and poor correlation with height for age. There is a relationship between age and the nutritional status of children, this shows that nutritional status improves with age and over nutrition also increase with age.

V. CONCLUSION

This study shows primary school pupils had good nutritional status as more than half were well nourished and had normal BMI value, although there was stuntedness, severe stuntedness and underweight among participants. We suggest effective infection control, extension and sustenance of home-grown school feeding program to all primary school children and monitoring of school children nutritional status.

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