

ASSESSMENT OF THE NUTRITIONAL STATUS OF CHILDREN IN A RURAL COMMUNITY OF CENTRAL EDO STATE, SOUTH-SOUTH PART OF NIGERIA***¹Ekhaton C.N., ²Omuemu O.V., ³Awunor N.S.**

Department of ¹Physiology, Faculty of Basic Medical Sciences, College of Medicine, Ambrose Alli University, Ekpoma-Nigeria. ²Community Medicine, University of Benin, Benin City, Nigeria. ³Community Medicine, Irrua Specialist Teaching Hospital, Irrua- Nigeria.

***Corresponding author:** cleo4real@yahoo.co.uk

ABSTRACT

This cross sectional study assesses the nutritional status of children -as indicated by selected anthropometric parameters, in a rural community in Edo Central Senatorial Zone, South-South, Nigeria. The survey was conducted amongst 900 primary school pupils in Esan West Local Government Area of Edo State, Nigeria. The age, sex, weight and height of the pupil, as well as selected socio-demographic characteristics of the parents/guardian, were collected by means of a face-to-face interview and questionnaire respectively. Results showed that the overall prevalence of stunting and under-weight were 14.90% and 19.60% respectively. Stunting and under-weight were observed to be prevalent among males (16.2% and 20.8%) and age 9 – 12 years (23.2% and 32.5%). Children living with both parents and those living with mothers only, were most stunted growth and under-weight. Although Nigeria is referred to as the giant of Africa, her nutritional status remains a major public health challenge especially amongst children. Therefore, to achieve her vision 2020, the nutritional status of children in rural communities must be improved.

Keywords: Children, Malnutrition, Growth, Nigeria.

Received: 31st May, 2012

Accepted: 18th June, 2012

Published: 31st July, 2012

INTRODUCTION

Nutrition may be viewed as the process by which a living organism utilizes food for growth and replacement of worn-out, dead and damaged tissues through digestion, absorption, assimilation and excretion. Ruel (2003) reported that it is the bedrock of a child's growth during the rapid growth phase of life. In fact, the impact of food intake during early life on later development and health has been documented (Malina, 1991). According to Sandoval-Priego et al. (2002), malnutrition is associated with more than 41% of the deaths occurring annually among children in developing countries. Also, 54% of all childhood mortality was attributable, directly or indirectly, to malnutrition (WHO 2001). By implication, malnutrition is indeed a major public health concern currently confronting the world.

It is estimated that in the 42 countries with 90% of global child deaths, a package of effective nutrition interventions could save 25% of childhood deaths annually (Jones et al., 2003). Sub-Saharan Africa has been reported to have a high prevalence of malnutrition (Lutter and Rivera, 2003). Available data indicate that diarrhoea, under nutrition and under-5yrs mortality, are prevalent in Nigeria

(UNICEF, 2001). Although Nigeria is referred to as the giant of Africa, her reported prevalence of malnutrition implicates her amongst the third world countries facing the burden of malnutrition.

Hence, this study assesses the nutritional status of children -as indicated by selected anthropometric parameters, in a rural community of Edo Central Senatorial Zone, South-South, Nigeria. Children attending primary schools were investigated considering the fact that they need sufficient nutritious food, and in particular, sufficient energy for unhindered growth (NHMRC, 2006).

MATERIALS AND METHODS

Study Area: This study was conducted in Esan West Local Government Area. This LGA -carved out from the old Okpeboh Local Government Area, is one of the 18 Local Government Areas in Edo Central Senatorial Zone, South-South, Nigeria. It has Ekpoma as its administrative headquarters and serves as a gate way to the northern part of Nigeria. The Area occupies between latitude 60 40° N and 60 45°

N, and longitude 60 05° E and 60 10 ° E (Obabori et al, 2006).

Study Population: The study is limited to children attending public primary schools in the study area and between the ages of 4 – 12 years old. Nine hundred (900) primary school pupils formed the study population.

Study Duration: Although the study lasted for seven months, the period of actual data collection and face to face interview was 8 weeks.

Study design: The study is a cross sectional study intended to describe primary school age children nutritional status.

Sampling Method: A multistage sampling method was used. Selection of schools was done by simple random technique via balloting, while the respondents were selected by systematic sampling from each arm of these schools.

Ethical Consideration: The Primary Health Center (PHC) coordinator as well as the Headmaster/Headmistress, were visited and an informed about the project and their consent sought and given.

Data Collection: A face to face approach was adopted, while a structured questionnaire was developed based on the objectives of study. The questionnaire had two parts –sections A and B. Section A dealt with the socio-demographic and anthropometric characteristic, while section B dealt with the profiles of the parents/guardians.

Well trained research assistances were drafted from the final year class in the Department of Physiology, College of Medicine, Ambrose Alli University, Ekpoma, to assist in data collection. The parameters collected from the participants were age, height, weight, mid-arm circumference and some selected guidance profiles.

A bathroom weighing scale (Harson Emperors, made in China) was used for weight, while height was measured using a measuring tape. The nutritional status of the children under study, was assessed using weight-for-age, weight-for-height, and height-for-age procedure in line with the NCHS reference standard. Z-scores below 2.00 SD of the reference NCHS standard were used to define stunting and underweight.

Method of Data Analysis: Completed questionnaire was analysed using statistical package for social sciences (SPSS) and the simple descriptive statistics were calculated for mean. Chi square and t test $p=0.05$ was used to check for significance of data

RESULTS

Of the 900 subjects (47.2% girls and 52.8% boys) involved in the study, 526 (58.4%) were within the ages of 9 - 12 years while 365 (40.6) and 9 (1%) were within 5 – 8 and less than 5 years of age. Majority (256; 28.4) was in primary three while those in primary six were the minor (56; 6.0%). While 74.4% reported they were living with both parents, those living with father alone, mother alone and grandmother were 2.4%, 11% and 12.1% respectively. Only 169 (18.80%) of the children's guidance had tertiary education as their higher level of education while others were either secondary (223; 24.8%) or primary (508; 56.4%) education (see table 1 for detail).

The mean age and anthropometrics measurement of the sample children are as presented in table 2. The mean age, height and weight between the both sexes were not significantly different.

Table 3 represents the growth status of the respondents as indicated by height and weight. The mean height was 129.70 ± 38.12 m while the mean weight was 26.57 ± 6.16 kg. However, 134 (14.9%) were stunted while 93 (10.3%) were having height above their normal height-for-age. Also, 176 (19.6%) of the children were underweight while 58 (6.4%) were overweight considering the normal weight-for-age.

Table 4 is a cross-tabulation of socio-demographic data and height range of the children. Stunting was prevalent in male compared to their female counterpart and in children within the age range of 9 -12 years. Children living with both parents (16.1%) and mother alone (13.1%) were more stunted when compared to others.

Table 5 is a cross-tabulation of socio-demographic data and weight range of the children. Underweight was also prevalence among male (20.80%) and children with ages 9 – 12 years (19.60%). Children living with mother alone (25.3%) were more underweight.

Table 1: Socio-demographic data of the sample children

Variable	Frequency (N = 900)	Percent
Age (years)		
1-4years	9	1.00
5-8years	365	40.60
9-12years	526	58.40
Sex		
Female	425	47.20
Male	475	52.80
Class		
PRY 1	99	11.00
PRY 2	152	16.90
PRY 3	256	28.40
PRY 4	219	24.30
PRY 5	120	13.30
PRY 6	54	6.00
Guardian		
Both parents	669	74.33
Father Only	24	2.67
Mother only	99	11.00
Grand-mother	108	12.00
GUARDIAN'S PROFILE		
Educational Status		
Primary Education	508	(56.40)
Secondary Education	223	(24.80)
Tertiary Education	169	(18.80)

Table 2: Mean age and anthropometric data of the sample children in respect to sex

Parameters	Sex	
	Male	Female
Age (years)	9.16±2.062	8.87±1.963
Height (meters)	128.61±11.12	128.36±12.72
Weight (kilograms)	26.62±5.53	26.52±6.79

Table 3: Growth status of the sample children

Height (m)	Frequency (N = 900)	Mean + Standard Deviation
Stunting	134(14.9)	
Normal	673(74.8)	
Above Normal	93(10.3)	129.70±38.12
Weight (kg)		
Below	176(19.6)	
Normal	666(74.0)	
Above	58(6.4)	26.57±6.16

Table 4: Association between Socio-demographic data and height range of the sample children

Living Status	Height Range			Total
	Stunting	Normal	Above Normal	
Both Parents	108 (16.1%)	493 (73.6%)	69 (10.3%)	670 (100%)
Father Only	2 (9.1%)	18(81.8%)	2(9.1%)	22(100%)
Grandmother	11(10.1%)	84(77.1%)	14(12.8%)	109(100%)
Mother Only	13(13.1%)	78(78.8%)	8(8.1%)	99(100%)
Total	134(14.8%)	673(74.8%)	93(10.3%)	900(100%)

Sex	Stunting	Normal	Above Normal	Total
Male	77(16.2%)	359(75.6%)	39(8.2%)	475(100%)
Female	57(13.4%)	314(73.9%)	54(12.7%)	425(100%)
Total	134(14.9%)	673(74.8%)	93(10.3%)	900(100%)

Age Group	Stunting	Normal	Above Normal	Total
1-4years	0(0%)	3(33.3%)	6(66.7%)	9(100%)
5-8years	12(3.3%)	292(80%)	61(16.7%)	365(100%)
9-12years	122(23.2%)	378(71.9%)	26(4.9)	526(100%)
Total	134(14.9%)	673(74.8%)	93(10.3%)	900(100%)

Table 5: Association between Socio-demographic data and weight range of the sample children

Living Status	Weight Range			Total
	Under weight	Normal	Over weight	
Both Parents	130 (19.4%)	494(73.7%)	46(6.9%)	670(100%)
Father Only	4(18.2%)	17(77.3%)	1(4.5%)	22(100%)
Grandmother	17(15.6%)	84(77.1%)	8(0.9)	109(12.1%)
Mother Only	25(25.3%)	71(7.1%)	3(3.0%)	99(100%)
Total	176(19.5%)	666(74%)	58(4%)	900(100%)

Sex	Under weight	Normal	Over weight	Total
Male	99(20.8%)	349(74.5%)	27(5.7%)	475(100%)
Female	77(18.1%)	317(74.6%)	31(7.3%)	425(100%)
Total	176(19.6%)	666(74%)	58(9.8%)	900(100%)

Age Group	Under weight	Normal	Over weight	Total
1-4years	0(0%)	6(66.7%)	3(33.3%)	9(100%)
5-8years	5(1.4%)	321(88%)	39(10.6%)	365(100%)
9-12years	171(32.5%)	339(64.4%)	16(3.1%)	526(100%)
Total	176(19.6%)	666(74.8%)	58(10.3%)	900(100%)

DISCUSSION

The prevalence of stunting and underweight computed from the anthropometric measurements -

height and weight, show that the children under study are malnourished and this observation has been noted in the study by Toriola (1990). In fact, Lutter and Rivera (2003) had reported that sub-Saharan Africa

has a high prevalence of stunting and low weight for age. Comparatively however, the observed prevalence of malnutrition among children in the community under study is higher than those reported for Eastern Europe (Emel et al., 2006).

Similar prevalence of malnutrition has been reported in pre-school children in Lagos, Nigeria (Meremikwe et al., 2000) as well as elsewhere in other countries (Grant, 1993; Jayatissa et al., 2006; Edris, 2007), but the prevalence of stunting and underweight observed in this study is not as severe as those reported for children in Western Nigeria (Ukoli et al., 1993; Walker et al., 1994, Oninla et al., 2006), as well as Northern Nigeria (UNICEF, 2001). Thus, this study justifies the UNICEF report that under nutrition in Nigeria is far more prevalent in the northern part than in the southern part (UNICEF, 2001).

In addition, our findings show that malnutrition status varies with age, and sex, as well as parental/guardian's status. For example, stunting was more prevalent among males (16.2%), age range 9 – 12 (23.3%) and children living with both parents (16.1%) and mother only (13.1%). Whereas underweight was prevalent among males (20.8%), age range 9 – 12 (32.5%) and children living with mother only (25.3%). This could be attributed to the fact that the majority of the guardian has primary education (56.4%) or secondary education (24.8%) as their highest educational cadre respectively. As such, they may not be employed. According to Edris (2007), children belonging to the low-income group were at a higher risk of being wasted, underweight and stunted than children of better income families. Also, low income has been reported to increase the likelihood of infection through such mechanisms as inadequate personal and environmental hygiene (Omawale, 1984).

Worrisome is the association of stunting and underweight in children with poor health and increased risk for adulthood disease. Such is the bases why the World Health Organization recommends that developing countries should monitor the existence of stunting in children (Toriola, 1990).

From the foregoing therefore, it is apparent that Nigerian might be exposed to increased risk of adulthood disease and poor development. Hence, to achieve her vision 2020, the nutritional status of children in rural as well as urban communities, need to be improved and this may be achieved by providing education, employments and implementation of poverty alleviation programs.

ACKNOWLEDGEMENT

We appreciate the assistance provided by Akpamu Uwaifoh, Okojie Kenneth and other trained research assistances in their final year at the Department of Physiology, College of Medicine, Ambrose Alli University, Ekpoma during data collection, collation and analysis.

REFERENCES

- Edris, M. (2007). Assessment of nutritional status of preschool children of Gumbrit, North West Ethiopia. *Ethiop.J.Health Dev*; 21(2):125-129.
- Emel, G., Gunay, C. and Semra, A. (2006). Is Undernutrition a Problem among Turkish School Children? Which Factors have an Influence on It? *Oxford Journal of Medicine for Tropical Pediatrics*; 52 (6): 421 – 426.
- Grant, J.P. (1993). The state of the world's children. UNICEF. New York.
- Jayatissa, R., Bekele, A., Piyasena, C.L. and Mahamithawa, S. (2006). Assessment of nutritional status of children under five years of age, pregnant women, and lactating women living in relief camps after the tsunami in Sri Lanka. *Food Nutr Bull*; 27(2):144-52.
- Jones, G., Steketee, R.W., Black, R.E., Bhutta, Z.A. and Morris, S.S. (2003). How many child deaths can we prevent this year? *Lancet*; 362: 65-71.
- Lutter, C.K. and Rivera, J.A. (2003). Nutritional status of infants and young children and characteristics of their diets. *J. Nutr*; 133: 2941s-2949s.
- Malina, R.M. (1991). Ratio and Derived indicators in the Assessment Nutritional Status. *Journal of Medicine for Tropical Pediatrics*; 2: 421-426.
- Meremikwu, M.M., Antia-Obong, O.E., Asindi, A.A. and Ejezie, G.C. (2000). Nutritional status of pre-school children in rural Nigeria: Relationship with intestinal helminthiasis. *JOMIP*; 1: 18 – 20.
- National Health and Medical Research Council (2006). Nutrient reference values for Australia and New Zealand, including recommended dietary intakes. Canberra: Commonwealth of Australia.

Obabori, A.O., Ebosele, R. and Mokidi, S.K. (2006). Decay problems in Cities: Renewal Options. *JABS*. 4(1 and 2): 144-153.

Omawale, Mcleod J. Food consumption and poverty in Rural Jamaica Ecology of food and nutrition. 1984;14.

Oninla, S.O., Owa, J.A., Onayade, A.A. and Taiwo, O. (2006). Comparative Study of Nutritional Status of Urban and Rural Nigerian School Children, *Journal of Tropical Pediatrics*; 53(1): 39-43.

Ruel, M.T. (2003). Progress in Developing Indicators to Measure Complementary Feeding Practices. In: SCN News. Meeting the Challenge to Improve Complementary Feeding, Moreira, A.D. (Ed.). United Nations System Standing Committee on Nutrition, Lavenhem Press, UK. Pp: 20-22.

Sandoval-Priego, A.A. Reyes-Morals, H. Perez-Cuevas, D., Abrego-Blass, R. and Orrico-Torres, E.S. (2002). Family Strategies of Life Associated with Malnutrition in Children less than 2 Years of Age. *Salud publica de Mexico*; 44: 1-9.

Toriola, A.L. (1990). Athropometric assessment of nutritional state of Nigerian children. *African J. Med. Sci.*

Ukoli, F.A., Adams-Campell, L.L., Ononu, J., Nwankwo, M.U. and Chanetsa, F. (1993). Nutritional status of urban Nigerian school children relative to the NCHS reference populatio school children relative to the NCHS reference population. *East Afr. Med. J.*;70 (7): 409 – 413.

UNICEF (2001). Children's and Women's Rights in Nigeria: A Wake-up Call. In: Situation Assessment and Analysis, Hodges, A. (Ed.). National Planning Commission, Abuja and UNICEF, Nigeria.

Walker, M.B., Omotade, O.O. and Walker, O. (1996). Height and weight measurement of Ibadan school children. *African J Med Sci*; 25 (3): 273- 276.

WHO. (2001). WHO Evidence for Information and Policy. World Health Organisation, Geneva. 2001.

AUTHORS' CONTRIBUTIONS

This is a part of Dr Ekhatör's MPH project under the supervision of Dr. Omuenu, O.U. and Dr. Awunor, N.S. All authors took part in the development and reviews of this manuscript.