HOUSEHOLD FOOD SECURITY, NUTRITIONAL AND HEALTH STATUS OF PRE-SCHOOL CHILDREN FROM LOW INCOME HOUSEHOLDS AREA OF OYO STATE, NIGERIA

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ABSTRACT
Availability of food and access to food are two important determinants of food security and Childhood nutrition is known to have a considerable impact on children's health. Therefore, this study was designed to assess the food security and health status of selected households in Nigeria. Nutritional status of one hundred and fifty children (0 – 5 years) was studied in Bode-Igbo, a rural area located in Iddo local government of Oyo State, Nigeria, to determine factors that may affect their household food security. Anthropometric measurement of height, weight, arm, head and chest circumferences were obtained together with information on socioeconomic, dietary pattern, health and sanitation of the parents using a structured questionnaire. The results showed that, using weight for height parameter, 18% had mild PEM, 19.3% were moderately malnourished and 11.3% were severely malnourished. Weight for age classification showed that 17.3% were mild, 30.7% had moderate PEM and 22% with severe PEM. Height for age, 56% of the children were normal, 60% were mild malnourished, 14.7% had moderate PEM and 23.0% had severe PEM. The majority of household heads were reported to be involved in farming (83.3%) while 50% and 27.9% of mothers were petty traders and food vendors respectively with the same population appeared to be food insecure. The findings showed that the duration of breastfeeding, areas of land owned and income had positive association with child nutritional status.
Keywords: PEM, nutritional status, malnourish, dietary intake, household food Security,

INTRODUCTION
Nigeria is the most populous country in Africa with an estimated population of about 140 million [1]. Approximately 68% of this population consists of women and children with over 70% residing and securing their livelihood in the rural areas [2]. The Nigerian agricultural sector is of notable relevance in the country's economic development and growth. It contributes more than 48% of the total annual GDP, employs about 68% of the labour force, accounts for over 70% of the non-oil exports and provides over 80% of the food needs of the country [3]. Despite these notable roles, food insecurity ranks top most among the developmental challenges facing Nigeria [4]. The level of food insecurity has continued to rise steadily in Nigeria since the 1980s [5]. It rose from about 18% in 1986 to about 41% in 2004 [6].

Food security is defined as access to adequate, safe and nutritious food required for healthy and active life by all people at all times. Food security is the ability of countries, regions or households to meet target levels of food consumption on a yearly basis [6, 7]. Availability of food and access to food are two essential determinants of food security. A number of factors such as income, educational level, household sizes are known to affect

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household food security. Food insecurity, hunger and poverty are closely linked. Child health is the nation's wealth and good nutrition is an index of index of good health. The nutrition and health status of children is an index of what the nation is investing in the development of its manpower potential [8, 9, 10,]

Malnutrition is widespread in most developing countries and it is particularly prevalent among the children, as they are the most vulnerable group of a society. Evaluation of the nutritional status of individuals and population groups is a tool of vital importance in public health and a feasible indicator of standards of living. Using the new WHO, 2005 GRS, 40% of children aged < 5 years were underweight, 46% were stunted, 15% were wasted and 1.4% were overweight/obese, according to criteria of the World Health Organization [11, 12]. The children also have high rate of diarrhea infection, nutritional blindness, morbidity and mortality. These high rates of malnutrition may be attributed to poor environmental sanitation, overcrowding, lack of preventive and curative health services and other socioeconomic, educational and cultural factors. Feeding practices have long been recognized as one potentially important determinant of infant malnutrition [13, 14, 15].

Many studies have been carried out to assess the nutritional status of children; in Ile-Ife[16]; in Port Harcourt[17,18];in Calabar[19]; in Lagos[20];in Ibadan[21,22]; in Pankshin[23]; in Nsukka[24]. Also, an assessment of the nutritional status of the school children in two distinct socioeconomic using anthropometric method and biochemical index-creatinine height index was carried out [25]. They showed that the high socioeconomic group children were slightly taller than those of the low socioeconomic groups in staff schools of Ibadan and Osegere respectively.

Also, Hart and Atinmo (1982) carried out another comparative study of nutritional status of rural and urban school age children in Rivers State of Nigeria using anthropometric method and biochemical method. It was observed that the mean anthropometric values of the rural children were lower than those of the urban although the difference was not significant. The determinants of food security and nutritional status of this selected group of children is valuable as a tool to ascertain their state of physical and mental and social wellbeing. Several studies conducted earlier in the country indicate prevalence of nutritional inadequacy syndromes in various section of farming community and other target groups with special reference under five years children, pregnant mother and lactating mother. In view of the above, there is therefore a need to examine critically the features of food security and nutritional status in rural areas of the country and to look at various factors that are involved and to what extent each of them contributes to the incidence of malnutrition and to know the present nutritional status of the rural household.

The objective of this study is to determine the food security and nutritional status of children under five years of age in a rural area of Oyo State,(ii)assess the magnitude of food and nutrition problems in children of under five years in the community (iii)determine the relationship between selected determinants of household food security and nutritional status.

MATERIALS AND METHODS

Demography of summary site: The data utilized for this study was collected by visiting Bode-Igbo village in Iddo Local Government Area (ILGA) of Oyo State. It lies in the rainforest area where most people are farmers of low socioeconomic level with or without education. The ethnic group is Yoruba, though there were other ethnic groups from various parts of Nigeria living in the area. Preliminary visit was made to the survey area during which the purpose of the study was explained to members of the community and upon which their consent was obtained.

Procedures of study

The study was a cross sectional and descriptive in design. The study sample consisted of randomly selected 150 children of (0-5) years from 42 households out of the existing 45 households in the Village. Survey instruments used in the study were child anthropometry and a structured questionnaire. Anthropometric measurements of height, weight, arm circumference, head circumference and chest circumference of the children were taken, while the questionnaires were administered to the parents. The questionnaire consisted such as age, sex, ethnicity, height, weight, head and chest circumferences, socioeconomic data such as father's and mother's occupations, land ownership, family system, household number, dealt with dietary pattern such as duration of breastfeeding, frequency of consumption of major foods, obtained information on health and sanitation such as children's sicknesses during the past few weeks, type of latrine,, number of people per room.

On the completion of the questionnaire, anthropometric measurement of weight, height and arm circumference were undertaken and recorded in their respective questionnaire using standard techniques as required by NCHS for anthropometric parameters. An electronic weighing scale which was standardized daily with a standardized weight was used to measure the weight of the children. A standard height scale was used for measuring height.

Data Analysis

All data collected were subjected to statistical analysis using the SPSS version 10 to determine the mean, frequencies and their relationships. Health Statistics (NCHS) standard, which is an international standard for various classifications of indices such as weight for age, height for age and weight for height. The indices were measured as <-ISD were considered as mild under nutrition, < - 2SD as moderate and < - 3SD were considered as severe   Cross tabulations of variables were made and statistics such as means and standard deviations were used.

RESULTS AND DISCUSSION

Socio-economic condition

Socio-economic condition of the rural household is presented in Table1.It was found that the average family size, land holding capacity and yearly family income per house hold were 8 members, 55decimal and N30,000 respectively. Out of the 42 household surveyed, majority (71.4%) had household of 6-10 members. The average minimum family member per house hold was 3 and the maximum family member per household was 15. Sixty-seven percent families (67%) was holding 1-50 decimal land and 2 families had no any

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type of land .They live on another land owner, which was not significant. The occupation pattern of the household heads was significantly different (Table 1) .The income status of the household heads was also significantly different .However, the house heads with income level between N25,000 to N34,999 naira were more in proportion (Table1). 66.6% of the parents earned less than ₦30, 000 per annum and which may affect health and nutritional status of children, showing the depth of poverty in predominantly agricultural households, faced with an inflationary economy and poverty of resources to increase production The educational status of the house heads was also significantly different as expected majority (60%) of them had primary school education (Table 1). They were characterized by poor access to agricultural inputs and inadequate support to increase production.

Table 2 showed the age distribution of selected area with 12% infants (0 − 12 months), while other children constituted 88% of the total population studied (0 − 5 years). These groups of children constitute highly dependent population that creates problem for household food security in the area and with adverse effect of poor income and low production, malnutrition may result. There was a negligible difference in distribution of sexes of children in the area (48%male and 52 %female) as shown in Table 4 showed the level of education of parents with 61.0% of the parents attended primary school while 28.1% had no formal education. This is a pointer to the level of poverty of the households and poor access to the right health and nutrition education message with others attending Koranic schools. The occupational distribution of household heads (Table 1) revealed that 80.0% were involve in farming as primary occupation, 11.9% were self-employed, while 4.8% were involved in wage employment. Also, 8% of mothers were farmers, while 50% and 27.9% were petty traders and food vendors respectively. Family size (Table 1) sowed that 81% were between 6 − 20, while 19.0% were between 1−5. This suggests that each household would need considerate amount of resource to ensure it is food secure, thus, confirming that there is population pressure on resource in that area which will lead to cooking large quantities of food. 90.4% had family size ranges from 1 − 10 while 9.6% were between 11 − 20.

Socio-economic condition in relation to nutritional status
Socio economic condition in relation to nutritional status is presented in Table 2, 3, 4, 5 and 6. Out of the 150 children under 5 year age, 18 severe malnourished children was found, 95 moderate malnourished and 34 mild malnourished children was found. No mal-nourished child was not found with income level N35, 000 with income level below 15,000 having the highest severe malnourished children of 7. Two (2) malnourished children household was holding "0" decimal land .Eight (8) malnourished children household was holding 1-50 decimal land and six was holding 50-100 decimal land, Farm Size distribution showed that 56% of the households (Table 1) had 1 − 8 acres and 44% had 2 − 6 plots. The same population appeared to be food insecure due high costs of production, poor transportation and storage facilities and poor access to agricultural inputs such as tractors, fertilizers, insecticides, herbicides, agrochemicals, seed/seedling. Unfortunately, none of them had access to these inputs. Hoes and cutlasses remained the commonest means of production in this area. This is in line with the World Bank poverty threshold that 1ha per household and between 15 and 50% was estimated to be food insecure, the higher proportion being in the south. 44% had farm sizes of 2 − 6 plots

while 56% had 1 – 8 acres.   In most children, snacks (e.g. groundnut) complemented the main food eaten by children. Tubers were inadequate proportions. About 12.3% showed adequacy of consumption of foods such as meat, fish, egg, and animal proteins. Protein from plant sources made up for this inadequacy as various vegetables and fruits were consumed. These results agreed with the study of Falusi (1985) who reported that family size, income, price and education are important variables affecting food consumption pattern in a group of rural children studied. With such a high rate of maternal morbidity and the heavy burden of production and reproduction, the mother's caring capacity was low and children did not receive adequate care. The infant and child feeding practices of mothers were not conducive to good nutrition. Breastfeeding was stopped shortly after birth. 33.4% of mothers stopped breastfeeding their children a year after birth (Table 4), while 1.3% breastfed more than 2 years. Early complementary feeding practices observed could not have promoted adequate nutrition. Inadequate timing of complementary feeding was common, by the proportion who started before 4 months when infants should have been exclusively breastfed. According to Van-Landingham *et al*., (1991) suggested that the strong association between breastfeeding and child survival is influenced by the duration and intensity of breastfeeding and the age at which a child receives complementary foods and liquids. 42.0% breast feed their children between 13 – 18 months, while 1.3% breast feed for more than 24 months

Information on Anthropometric Status
Table 2 showed that more than half (58.3%) of the children surveyed were wasted (< 90 of the normal weight for height) while 90% were underweight and 57.3% were stunted. The table revealed that using weight for height parameters, 18% had mild PEM, 19.3% moderate and 11.3% severe malnutrition. Then weight for age; only 17.3% were mild, 30.7% had moderate PEM, and 22.0% with severe PEM. Height for age: 56% of the children were normal, 6.0% had mild PEM, and 14.7% had moderate PEM and 23.0% with severe PEM. These findings are in agreement with the study of Hart and Atinmo (1982) who reported that more than half of the children were below normal when height for age was considered in a population of rural children in River State. The findings were also in agreement with respect to weight for height. it was reported that more than half (83%) of the children studied were normal.

Table 3 showed a negative association between income and degree of malnutrition of the children, there was no improvement in nutritional status of children with increase in income especially height for height. This was due to expenditure of income on non-food production, which leads directly to variation in real income which affects economic access of households to food. However, table 4 showed an improvement in income with the duration of breastfeeding. This showed that improvement in the nutritional status of mothers, increase the duration of feeding, as the income increased, the duration at breastfeeding also increased. Omololu (1985) revealed that about 99% of mothers breastfeed their infants at birth. However, it is believed that infant nutrition problems arise from postponed initiation of breastfeeding, low rate of exclusive breastfeeding and wrong timing of complementary feeding. Table 5 and 6 showed slight improvement on land capacity with degree of malnutrition and duration of breastfeeding of the children under survey. There was a positive association indicating that increase in the area of land owned resulted in corresponding improvement in the duration of breastfeeding. This was

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due to the fact that mothers had more food and time to spend with their children in breastfeeding, also increase the caring capacity of the households, thus confirmed that access to land is an important determinant of household food security.

CONCLUSION

This study has assessed the determinant of household food security and nutritional status of children considering the various factors that may affect their dietary intake and nutritional status. The findings showed that more than half of the children studied were underweight (70.0%), a large percentage of the children were found to have severe protein-energy malnutrition, while those with mild PEM were 17.3% when weight for age was considered. The results further showed that there are certain association among some socioeconomic variables and the anthropometric measurements and vulnerability of children is reflected in their anthropometry measurement result. The factors affecting household food security must be revisited as it one of the causes of malnutrition. Issues of access of household to land for agriculture in rural areas and making food available by improving processing packaging and preservation are recommended.

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Family members	Member no.	Family no	%
	1-5	8	19.1
	6-10	30	71.4
	11-15	4	9.5
	Total	42	(100.0)
Land holding capacity	**Land size(decimal)**	**Family no**	**%**
	0	2	1.3
	1-50	100	66.7
	50-100	48	32.0
Household family income	**Family income**	**Family no**	**%**
	N5000-14,999	29	19.3
	N15000-24,999	45	30.0
	N25,000-34,999	33	22.1
	N35,000-44,999	20	13.3
	.>45,000	23	15.3
	Total	150	(100.0)
Educational status	**Status**	**Family no**	**%**
	No education	31	28.2
	Primary school(completed)	66	60.0
	Secondary school(Not completed)	5	4.6
	Secondary school(complete)	3	2.7
	Others	5	4.6
	Total	110	(100.0)
Occupation of household heads	**Fathers Occupation**	**Family no**	**%**
	Farming	30	80.0
	Artisan	5	11.9
	Civil servant	2	4.8
	Others	5	3.3
	Total	42	(100.0)
	Mothers occupation	**Family no**	**%**
	Petty trader	34	50.0
	Food vendor	19	27.9
	Farmer	8	11.8
	Others	7	10.3
	Total	68	(100.0)

Table 1. Socio-economic conditions of rural households
Source: *Field survey (2005)*

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Table 2 Classification of children on heights and weights NCHS standard of classification

Parameters	Sample size	< -1sd (Mild PEM)	< -2sd (Moderate PEM)	< -3sd (Severe PEM)
Weight for height	150	27 (18.8%)	29 (19.3%)	17 (11.3%)
Weight for age	150	26 (17.3%)	46 (30.7%)	33 (22.0%)
Height for age	150	9 (6.0%)	22 (14.7%)	35 (23.3%)

Figures in parentheses are in percentage. $p < 0.05$

Table 3.Income level with child Anthropometry

Income level (N)	Family No.	Degree of malnutrition (W/A)			Degree of malnutrition (W/H)		
		Mild	Moderate	Severe	Mild	Moderate	severe
5000 - 14,999	29	4	18	7	4	18	7
15,000 -24,999	45	7	33	6	7	33	6
25,000 -34,999	33	7	19	4	7	19	4
35,000 - 44,999	20	3	17	Nil	3	17	Nil
Above 45,000	23	13	10	Nil	13	10	Nil

Table 4. Income level with duration of breastfeeding

Duration of breastfeeding

Income level(N)	Family no	1-12 months	13-24 months	> 24 months
5000-14,999	29	9	19	Nil
15,000-24,999	45	18	27	Nil
25,000-34,999	33	9	24	Nil
35,000-44,999	20	5	14	1
Above 45,000	23	2	20	1

Table 5. Land holding with child Anthropometry

Land-size (decimal)	Family No.	Degree of malnutrition (W/A)			Degree of malnutrition (W/H)		
		Mild	moderate	severe	Mild	moderate	Severe
0	2	Nil	----	2	----	----	2
1-50	100	40	50	10	35	53	12
51-100	48	39	1	----	16	24	1

Table 6. Land holding with duration of breastfeeding

Land size (decimal)	Family No.	Degree of breastfeeding		
		1---12 months	13—24 months	.> 24 months
0	2	2	Nil	Nil
1-50	100	15	82	3
51-100	48	2	45	1