HOUSEHOLD FOOD SECURITY AND NUTRITIONAL STATUS AMONG CHILDREN AGED 1-5YEARS IN MAINLAND LGA, LAGOS STATE NIGERIA.

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Abstract

Background: Household food security and malnutrition are common problems that face the Nigerian child. However, inadequate data exists on household food security and nutritional status of the under five children. The purpose of the study is to determine the level of household food security and its correlates, and to determine the nutritional status of children between 1-5years in Mainland Local Government LGA, Lagos State.

Methods: A total of 320 households with 390 children aged 1-5years therein were analyzed. Study area was Mainland Local Government LGA, Lagos State. A descriptive cross-sectional study design using an interviewer administered questionnaire. it contained socio demographic and socio-economic characteristics of the respondents, child feeding practices, food frequency table, food insecurity questions from the HFIAS and anthropometric measurements of the children. Data was analysed using **epi info** (v 3.5.1) statistical software.

Results: only 2.8% of households were food secure. Socio economic factors such as level of education, occupation and household income were found to positively affect household food security. Socio demographic factors such as age, gender, marital status, and household size did not have a statistically significant effect on household food security. The prevalence rates of stunting, underweight and wasting were 45.4%, 8.7% and 1.7% respectively. Most of the children (75.45%) had MUAC values > 13.5cm with 26.45% of them being malnourished. Most of the households had adequate intake of carbohydrates and protein 86.3% and 90.3% respectively.

Conclusion: Very few households were food secure in Mainland Local Government LGA, Lagos State, low socio economic variables shown to worsen the level of food insecurity. High rate of stunting was observed compared to wasting and underweight. An integrated approach will be required to improve the socio-economic status of the households in Mainland LGA, with maternal education and improved household income at the fore.

Keywords: household, food security, nutritional status, under-fives.

Introduction

Household food security is said to exist when a household can secure, either from its own production or through purchases, adequate food for meeting the dietary needs of all members of the household.[1] Household food security is said to be present when members of the household have sufficient, safe, and nutritious food, with food preferences for an active and healthy life.[2] The WHO considers household food and nutritional security as a fundamental human right. Projections from the Food and Agricultural organisation (FAO) show that 1.02billion people i.e., one sixth of the world's population are suffering from hunger. Food and Agricultural organization (FAO) recognizes that healthy, well-nourished people are both the outcome of successful social and economic development and constitute an essential input into the development process. **Error! Bookmark not defined.**

The FAO reported that almost 870 million people were chronically undernourished in the years 2010-2012. This represents 12.5% of the global population, or 1 in 8 people. Higher rates occur in developing countries, where 852 million people (about 15% of the population) are chronically undernourished.[3] The United Nations (UN) noted that about 2 billion people do not consume a sufficient amount of vitamins and minerals.[4] Therefore households who do not meet the criteria as stated in the definition above are said to have food insecurity. The FAO also identified the four pillars of food security as availability, access, utilization, and stability.[5] The millennium development goals were developed by the United Nations (UN) in the year 2000, with the aim of improving the lives of people worldwide. It has 8 goals. The 1st goal: "eradicate extreme hunger and poverty".[6] This tells us the importance of food and its security in the world. The goal has three (3) targets; to reduce by half the proportion of people living below $1.25 per day between 1990 and 2015.[7] Secondly, achieve decent employment for women, men and young people. Lastly, reduce by half the proportion of people who suffer from hunger between 1990 and 2015.[7] The latest FAO estimates in 2014 indicate that global hunger reduction continues: about 805 million people are estimated to be chronically undernourished in 2012–14, down more than 100 million over the last decade, and 209 million lower than in 1990–92. In the same period, the prevalence of undernourishment has fallen from 18.7 to 11.3 percent globally and from 23.4 to 13.5 percent for developing countries. Nigeria has been ranked 86 out of 107countries indexed in the latest Global Food Security Index (GFSI) in 2012. The indexing which cut across three core categories, namely the affordability, availability, quality, and safety.[8] Some 29 percent of households in the poorest wealth quintiles have unacceptable diets (9 percent poor and 20 percent borderline) compared with 15 percent in the wealthiest (2 percent poor and 13 percent borderline). The poorest livelihoods are found in agriculture; Seventy-seven percent of subsistence farmers are found in the two poorest wealth quintiles, as are 70 percent of mixed or cash crop farmers.[9]

Considering the large number of undernourished children who are under five years old, who present at the health facilities in Mainland Local Government Area of Lagos State. There was a need to understudy the quality of nutrition they receive at home; this awakened an interest to go into the community and find out from the mothers

and heads of households about their feeding practices and to find out factors that influence their practices. This study assessed the relationship between Household food security and nutritional status of children between 1-5years in Mainland Local Government.

Methods

Study area

Mainland Local Government area (LGA), located in Lagos State, Southwest Nigeria has a land mass of 19.62km^2 and a population of six hundred and twenty-nine thousand, four hundred and sixty-nine (629,469) according to the 2006 National census.[10]

The Local Government is made up of 9 wards, designated with letters A-I, i.e. Ward A, Ward B, Ward C, Ward D, Ward E..... Ward I. It has two (2) Area offices at Yaba and Ebute-Metta. Mainland LGA a commercial nerve centre created for all Nigerians from different cultural backgrounds. Originally, farming and fishing were the predominant occupations of the inhabitants but with modernization and industrialization, its people are into commerce and housing, banking, oil and gas, various trades, and artisans. It has four major health facilities which include the Federal Medical Centre, Harvey Road Health centre/ General Hospital and Ebute-Metta Health Centre. It has four Primary Health Care Centres which service 2-3 of the Wards in the Area.

Study Design

A descriptive cross sectional study design was used.

Study population

This comprised Households with one or more children aged 1-5years in Mainland LGA of Lagos State.

Inclusion criteria:

1. Households with one or more children between 1-5years.
2. Households that have been resident in the area for at least six months.

Sample size determination:

The minimum sample size was calculated using the formula;

$$N = \frac{Z^2PQ}{d^2}$$ (Cochran's equation)[11]

Where N= minimum sample size

Z=confidence interval at 95%= 1.96

P= proportion taken at 25%=0.25 (proportion of household food security from a study on determinants of Food Security among the Rural Farming Households in Kwara State, Nigeria. By Omotesho O.A: 2006)[12]

Q= complimentary probability = 1-P =1-0.25 =0.75

d= margin of error at 5%=0.05

Therefore;

$$n = \frac{(1.96)^2 \times 0.25 \times 0.75}{(0.05)^2} = \frac{0.7203}{0.0025}$$ n= 288.12

To make allowance for non-response 10% was added i.e.

288×0.1= 28.8

Minimum sample size calculated is 288+28.8 = 317.

A total of 320 households were used to compensate for non-response.

Sampling

A multistage sampling technique was used to select the sample size for the study.

Stage 1: S**election of Division:**

Two (2) divisions exist; Ebute Metta East and Ebute Metta West. Ebute Metta East was randomly selected.

Stage 2: Selection of streets:

A total of 87 streets were found from the Nigerian Postal service website (NIPOST).[13] The first street was selected by balloting then a systematic sampling technique was used to select a total of 20 streets. This formula was used;

K= N/n

Where: K- the sampling interval

N: is the total number of streets in the Area (sampling frame)

n: proposed/desired number of streets.

K=87/20 = 4.35

Every 4th street on the list was selected until a total of 20 streets were obtained.

Stage 3: Selection of households

On each street a total of 16 Households that met the inclusion criteria were sampled. The first household was randomly selected, and every other house alternately was interviewed until a total of 16 households on each street.

Stage 4: Selection of respondents

In each household the mother or the primary care giver was asked questions from the data collection tool that had been prepared. Where the mothers are the primary caregivers were not at home at the time of data collection, another visit was planned to the time that the mother or primary care giver was available to provide all the information needed for the purpose of this study.

Data collection

An interviewer administered questionnaire was used. It was divided into 4 parts; the first contained socio-demographic information of the respondents, the second part contained questions on household food practices and a food frequency table that was obtained from a previous work in this region[i], this was used to know the frequency and quality of feeds being given to these children. The third part contained household food security questions based on the HFIAS tool.

The fourth and final part consisted of anthropometric measurements of the children. The height, weight, and mid upper arm circumference (MUAC) were taken. The child's gender and age at last birthday were also obtained. Immunization history was sought. Information on the full immunization status of the children obtained. The basinet weighing scale was used for children who cannot stand and a harson bathroom scale was used for the older children. A stadiometer was used for the measurement of height and a recumbent meter was used to measure the length of the younger children. A MUAC tape was used to measure the MUAC.

The younger children who could not stand were measured in recumbent position. Three research assistants with a minimum of senior secondary certificate examination SSCE/GCE were trained and assisted in data collection. The questionnaire was pretested among Household heads who met the inclusion criteria in Folarin Street, Isheri Magodo, Lagos. It is also a suburban setting. Ten questionnaires were pretested and analysed. Corrections were made from the short comings observed in the process. The aim of pretesting was to ensure the appropriateness of the questionnaires.

Data management

Epi info (v. 3.5.1; Centre for Disease Control and prevention, Atlanta GA) statistical software programme was used for data entry and analysis.[13]

Ethical consideration

Ethical approval was obtained from the Health Research and Ethics Committee of the Lagos University Teaching Hospital. A letter of introduction was obtained from the Department of Community Health and Primary care, University of Lagos. Advocacy visits were made to the Chairman, Mainland Local Government and Women leaders in the community. Written informed consent was obtained from mothers and or primary caregivers of children aged 1-5 years who participated in our study. They were assured of confidentiality during and after the study.

RESULTS

Three hundred and twenty-seven questionnaires were administered to participants in Mainland Local Government area. Three hundred and twenty valid questionnaires were selected from there. This is equal to our calculated sample size with a 10% allowance for non-response. 4 questionnaires were invalid and could not be used for the study. There were no cases of refusal. A response rate of 97.86% was obtained. 320 households were interviewed but a total of 390 children aged 1-5years were found in theses households and were eligible to participate in the study.

Socio-demographic characteristics of respondents

Three hundred and three (94.3%) respondents were females, and 17 (5.3%) were males. The mean age was 31.51±4.94. Two hundred and ninety-nine (93.4%) of the respondents were married while twenty-one (6.6%) were unmarried. Two hundred and twelve (66.2%) were Christians while one hundred and five (32.8%) were Muslims. This study showed that the association between level of education, occupation, household monthly income and number of children under five years in a household with level of household food security were statistically significant ($p<0.05$). Age, gender, marital status, ethnicity, and religion were found not to show any statistically significant association ($p>0.05$) with level of household food security.

Table 1: Socio-Demographic Characteristics of Respondents

VARIABLE	FREQUENCY (n= 320)	PERCENTAGE
Age		
1-20	3	0.9%
21-30	141	44.1%
31-40	170	53.1%
41-50	5	1.6%
51-60	1	0.3%
Gender		
Female	303	94.7%
Male	17	5.3%
Marital status		
married	299	93.4%
unmarried	21	6.6%
religion		
Christianity	212	66.3%
Islam	105	32.8%
Others	2	0.6%
Traditional	1	0.3%
Ethnicity		
Hausa	5	1.6%
Ibo	95	29.7%
Others	31	9.7%
Yoruba	189	59.1%
Children <5yrs in HH		
1	243	75.9%
2	65	20.3%
3	10	3.1%
4	2	0.6%
Household size		
2-4	193	60.3%
5-6	107	33.4%
7-9	20	6.3%

Majority of respondents (53.1%) were aged 31-40years. Respondents were mainly females (94.7%). Majority of households (75.9%) had only one child less than five years, and 0.6% of households had up to four children aged 1-5years. Most respondents were less than five per household. (60.3%).

Table 2: Socio-economic characteristics of Respondents

VARIABLE	FREQUENCY (n=320)	PERCENTAGE
Education		
Islamic	5	1.6%
post-secondary	105	32.8%
primary	9	2.8%
secondary	169	52.8%
vocational	32	10.0%
occupation		
professionals	23	7.2%
skilled	11	3.4%
Semi-skilled	55	17.2%
unskilled	223	69.7%
Unemployed	8	2.5%
Household Income(naira)		
<5000	46	14.4%
5001- 20000	183	57.2%
20001- 35000	54	16.9%
35001- 50000	15	4.7%
>50000	22	6.9%

A total of 52.8% of respondents have had secondary education, 32.8% had post-secondary education and only 2.8% had primary education. 69.7% of respondents were unskilled, 3.4% were skilled and 7.2% were professionals. Majority (57.2%) of respondents had monthly incomes of 5001-20000 naira only 6.9% earned above 50000 naira.

Table 3: Frequency of Household food practices

VARIABLE	FREQUENCY	PERCENTAGE
No. of times child fed/day		
2-3 times	121	38.4%
4-6times	192	61.0%
≥ 7times	2	0.6%
Cook/prepare food at home		
No	5	1.6%
Rarely	2	0.6%
Sometimes	29	9.1%
Yes	284	88.8%
Buy already prepared food		
No	75	23.4%
Rarely	41	12.8%
Sometimes	142	44.4%
Yes	62	19.4%

Majority (90%) of the respondents fed their child/children 2-4 times daily, while 10% fed their children 5-7times daily. A large number (88.9%) of the respondents always prepared food themselves, while 44.4% sometimes buy already prepared food.

Table 4: Frequency of consumption of different food groups

	ADEQUATE		INADEQUATE	
FOOD GROUP	**FREQ**	**%**	**FREQ**	**%**
CARBOHYDRATE	276	86.3%	44	13.80
PROTEIN	289	90.3%	31	9.7%
SNACKS	147	45.9%	173	54.1%
VITAMINS AND MINERALS	199	62.2%	121	37.8%

Majority (86.3%) of respondents had adequate intake of carbohydrate foods, 90.3% had adequate intake of protein rich foods. Of all the respondents, 62.2% had adequate intake of vitamins and minerals, with 9.7% of respondents having inadequate consumption of protein rich foods.

Table 5: Frequency of households that experienced food security related conditions within the past 6months

	Never		Rarely		Sometimes		Often	
	freq	**%**	**freq**	**%**	**freq**	**%**	**freq**	**%**
Worried food would run out	94	29.4%	69	21.6%	128	40.0%	29	9.1%
Unable to feed children nutritious food	43	13.4%	82	25.6%	174	54.4%	21	6.6%
Eat less than usual	70	21.9%	119	37.2%	85	26.6%	46	14.4%
Skip a meal	55	17.2%	78	24.4%	152	47.5%	35	10.9%
Stored food run out and unable to buy more	115	35.9%	57	17.8%	115	35.9%	33	10.3%
Wish you could buy more food	15	4.7%	40	12.5%	132	41.3%	132	41.3%

A hundred and twenty eight respondents (40.0%) were sometimes worried, they would run out of food, while 54.4% were sometimes unable to feed their children nutritious food. A total 14.4% often ate less than usual, with 47.5% sometimes skipping a meal to enable other members of the household eat. A hundred and fifteen households (35.9%) were sometimes unable to buy more food after stored ones have been exhausted.

Table 6: Frequency of household food security

HHFS score	**Frequency**	**Percent**
secure	9	2.8%
mild	35	10.9%
moderate	117	36.6%
severe	159	49.7%

Only 2.8% of households were food secure, while 49.7% experienced severe food insecurity. A total of 36.6% of households experienced moderate food insecurity with 10.9% experiencing mild food insecurity.

Table 7: Association between number of under 5 children in household and household food security level

	Food Secure		**Mild food insecurity**		**Moderate food insecurity**		**Severe food insecurity**		**Total**
Children <5yrs in household	**freq**	**%**	**freq**	**%**	**freq**	**%**	**freq**	**%**	
1 child	5	(2.1)	21	(8.6)	85	(35.0)	132	(54.3)	**243**
2-4 children	4*	(5.2)	14	(18.2)	32	(41.6)	27	(35.1)	**77**
Total	9	(2.8)	35	(10.9)	117	(36.6)	159	(49.7)	**320**

X^2=11.97, df= 3, *fisher's exact p= 0.006

There is a statistically significant association (p= 0.006) between the number of children <5years and the level of household food security. Households with 2-4 children under 5years had better food security (5.2%) compared to households with one child (2.1%). Severe food insecurity was seen in households with one child under 5years.

Table 87: **Association between household size and household food security level**

	Food Secure		Mild food insecurity		Moderate food insecurity		Severe food insecurity		**Total**
Household size	**freq**	**%**	**freq**	**%**	**freq**	**%**	**freq**	**%**	
2-4 persons	5	(2.6)	24	(12.4)	63	(32.6)	101	(52.3)	**193**
5-6 persons	3*	(2.8)	11	(10.3)	46	(43.0)	47	(43.9)	**107**
7-9 persons	1*	(5.0)	0*	(0.0)	8	(40.0)	11	(55.0)	**20**
Total	9	(2.8)	35	(10.9)	117	(36.6)	159	(49.7)	**320**

X^2= 6.18, df= 6, *fisher's exact p= 0.403

There is no statistically significant association (p=0.403) between household size and level of household food security. Households with 2-4 members had similar levels of severe food security (52.3%) which can also be seen in households with 7-9 members (55.0%). This means that irrespective of the number of persons in a household, food insecurity is still experienced.

Table 9: Association between level of education and household food security level

	Food Secure		**Mild food insecurity**		**Moderate food insecurity**		**Severe food insecurity**		**Total**
Level of education	**freq**	**%**	**freq**	**%**	**freq**	**%**	**freq**	**%**	
primary	1*	(11.1)	0*	(0.0)	4*	(44.4)	4*	(44.4)	**9**
secondary	2*	(1.2)	10	(5.9)	67	(39.6)	90	(53.3)	**169**
Post-secondary	4*	(3.8)	16	(15.2)	33	(31.4)	52	(49.5)	**105**
Islamic	0*	(0.0)	0*	(0.0)	3*	(60.0)	2*	(40.0)	**5**
Vocational	2*	(6.3)	9	(28.1)	10	(31.3)	11	(34.4)	**32**
Total	9	(2.8)	35	(10.9)	117	(36.6)	159	(49.7)	**320**

X^2= 25.93, df= 12, *fisher's exact p= 0.011

There is a statistically significant association (p=0.011) between level of education and household food security. Respondents with primary education were food secure (11.1%) compared to those with secondary education (1.2%) and post-secondary education (3.8%). The highest level of severe food insecurity was seen in respondents with secondary education (53.3%) and the lowest among respondents with vocational training (34.4%). This could be due to the daily income earned by the vocation group.

Table 10: **Association between income and household food security level**

	Food Secure		**Mild food insecurity**		**Moderate food insecurity**		**Severe food insecurity**		**Total**
Average income	**freq**	**%**	**freq**	**%**	**freq**	**%**	**freq**	**%**	
<5000	0*	(0.0)	5	(10.9)	23		18	(39.1)	**46**
5001- 20000	2*	(1.1)	14	(7.7)	62	(33.9)	105	(57.4)	**183**
20001- 35000	0*	(0.0)	9	(16.7)	27	(50.0)	18	(33.3)	**54**
35001- 50000	0*	(0.0)	3*	(20.0)	4*	(26.7)	8	(53.3)	**15**
>50000	7	(31.8)	4*	(18.2)	1*	(4.5)	10	(45.5)	**22**
Total	9	(2.8)	35	(10.9)	117	(36.6)	159	(49.7)	**320**

X^2= 94.68, df= 12, *fisher's exact p=0.000

There is a statistically significant association (p=0.000) between average household monthly income and level of food security. Households that earned an average income of >50,000 naira had (31.8%) food security as compared to those who earned between 5001-20,000 naira (1.1%). The higher the income, the better the level of food security.

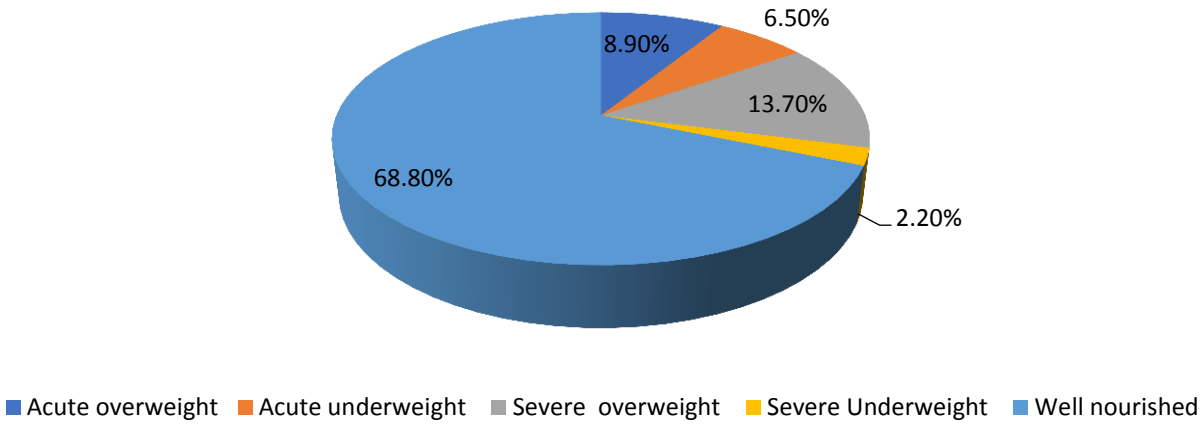


Figure 1: WAZ distribution for children aged 1-5years in the households

Majority (68.8%) of the children were well nourished, with 13.7% being severely overweight. And 6.5% had acute overweight, while 2.2% had severe underweight. (Figure 1)

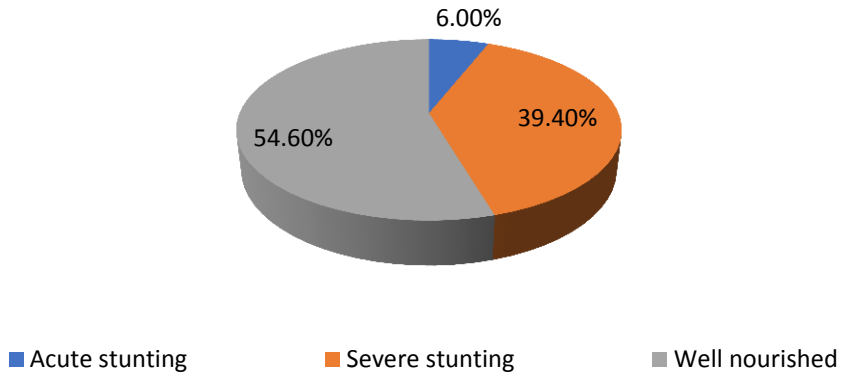


Figure 2: HAZ distribution for children 1-5years in households in Mainland L.G.A

Majority of the children were well nourished (54.6%) with 39.4% having severe stunting. Only 6.0% have acute stunting (Figure 2)

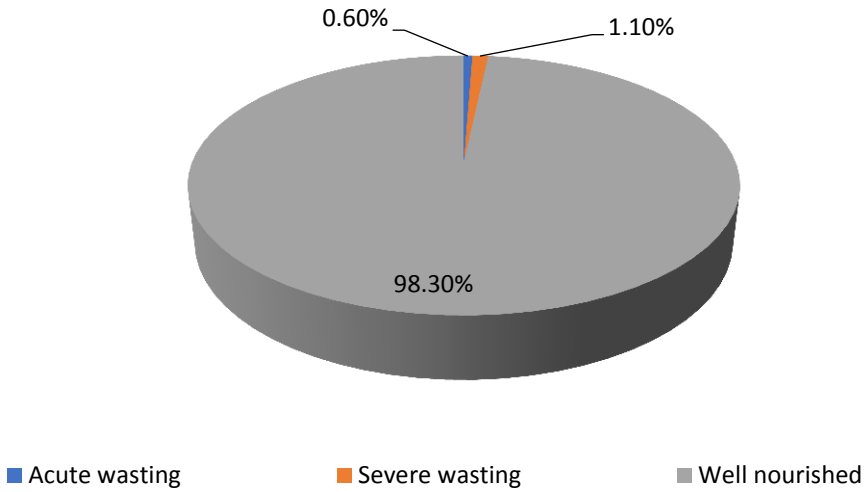
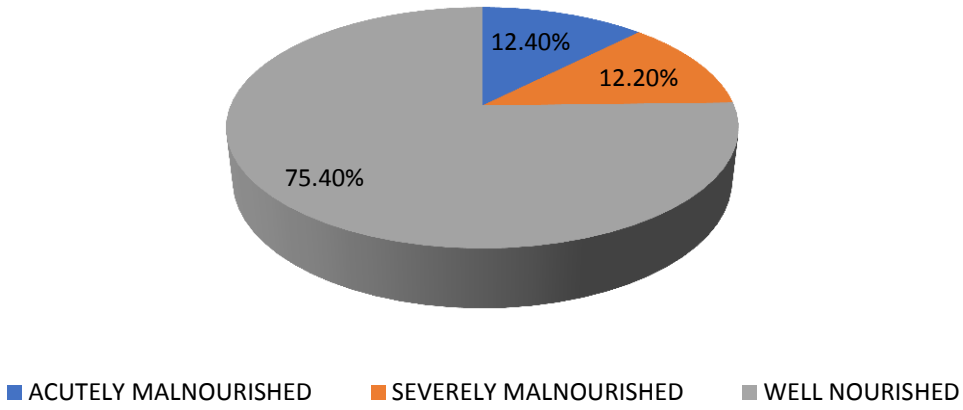


Figure 3: WHZ for wasting in children aged 1-5years in Mainland L.G.A

Majority (98.3%) of the children were well nourished. A total 1.7% of the children had wasting (Figure 3).

Figure 4: MUAC distribution among children aged 1-5years in Mainland L.G.A



Majority (75.4%) of the children were well nourished based on the measurement of their mid upper arm circumference.

A total 12.4% of children were acutely malnourished and another 12.2% were severely malnourished.

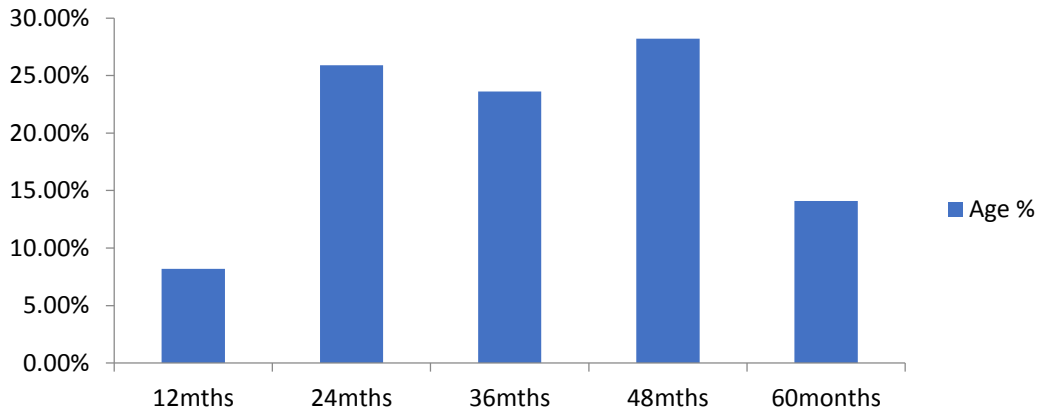


Figure 5: Frequency of age distribution in children

The highest participants by age group were children aged 48months with a frequency of 28.2% followed by the 24month age group with a frequency of25.9%. the least participants were those of the 12months age group which accounted for only 8.2% of the total number of children that participated in the study.

DISCUSSION

The purpose of this study was to identify the correlates of household food security and the nutritional status among children aged 1-5years in Mainland local Government Area. Most of the respondents interviewed were women (94.7%), this can simply be because women are the primary caregivers of young children. They are concerned with the feeding, health, immunization, and upbringing of the young children. Apart from raising the children, the women are also responsible for preparing meals for the households. More than half (53.1%) of the respondents were within the age group 31-40years and close to ninety five percent (95%) of the respondents were married.

The average household monthly income of more than half (57.2%) of the respondent was between 5001-

20000 naira, with up to 70% of them being unskilled. Most households (75.9%) had only a child that is less than 5years within an average household size of 2-4members (60.3%). About sixty percent of households fed their children 4-6times daily, with only 0.6% feeding seven or more times a day. The study revealed that 2.8% of the households were food secure, this figure is lower than what was obtained in a study carried out in Kwara state, where the 25% of the households were food secure.[15] This is not surprising because the households studied in Kwara state were farming households, while the households in this current research were traders, fishermen and artisans with very little or no access to farmland. Such families have to make do with the proceeds of their trade. Another study carried out in Delta state revealed about 31.25% 0f the households were food secure, the study identified income as the single most important determinant of household food security.[16] Majority of households had adequate consumption of carbohydrates (86.3%) and protein (90.3%), with average intake of snacks and vitamins. Carbohydrates and proteins make up the main food groups for energy and the building blocks of the body, and respondents show adequate intake for these groups. This might be responsible for the anthropometric indices observed in the study with majority (98.3%) of the children being well nourished with the weight for height z scores (WHZ) which is used to indicate wasting in children if values fall below normal. This puts at 1.7% the children who are wasted. This figure is lower than those obtained from similar studies. One study done in Akure on anthropometric indices and nutrition among under five children placed the percentage of wasting at 14.8%.[17] The discrepancies in the figures could be due to the fact that the study carried out in Akure was specifically in low-income communities which could indicate the poorer nutritional status. The current study was done in a local government area that can be described as suburban with 7.2% of the respondents being professionals, 3.4% being skilled and 17.2% semi-skilled, the current study population has a mixed picture of occupation which directly reflects their per capita income as against the Akure population that was restricted to low-income earners. Another study done in north-eastern Nigeria, which is similar to the one done in Akure, had 17% of the children wasted.[17,18] This figure is also higher than that obtained in the current study which is 1.7%. Possible explanation for this could be the low level of maternal education. Up to 70% of mothers that were recruited for the study had no form of formal education compared to mothers in this study that 52.8% had secondary education and 32.8% had post-secondary education.

This study obtained a result for height for age measurement with 54.6% of the 390 children recruited for this study as being well nourished. 39.4% were severely stunted and 6.0% as acutely stunted. This places the total stunting at 45.4%. height for age measurement when it occurs below two standard deviations (<2SD) from the normal is considered as stunting this means the child in question is obviously shorter than his age mates. Nutrition plays a vital role in the physical growth of a child. A study done in Akure, southwest Nigeria had a stunting rate of 12.5%.[17] In a comparative study carried out in 3 rural areas, stunting among children under five years in the various communities were as follows: 5.8%, 8.2% and 16.5%.[19] Another study carried out in rural Nigeria among preschool children showed a stunting rate of 21.5%.[20] The above three studies showed stunting rates lower than that obtained from the current study, the discrepancies could be in the study population, where the above studies were all carried out in rural areas and the current study was conducted in a suburban area. A study carried out in northern Nigeria revealed a stunting rate of up to 61% among preschool children.[18] The study had children from low socio-economic class with maternal education very low or absent. This could be the possible explanation for the high rate of stunting observed in this study. Maternal education when present and high can impact positively to the health and wellbeing of the family. Once a mother is educated, she

can take informed decisions about food, balanced diet, immunization, personal and environmental hygiene. This is further strengthened if the woman has socio-economic security, if she earns money, then the above roles will be easily fulfilled. In yet, another study carried out in southwest Nigeria, stunting rate was found to be 33.52%.[17] This study was conducted among low-income earners, majority of mothers of the children were uneducated (80.7%) and earned a paltry monthly income in the range of N1, 500-N5, 900. This could be the reason for the high stunting rate observed.

The mid upper arm circumference (MUAC) is used to measure level of nutrition among children under five years. Values <12.5cm suggests severe malnutrition. Values between 12.5cm-13.5cm suggests moderate malnutrition. Values above 13.5cm are considered well nourished. In other words, values above 13.5cm are normal, anything below that is malnutrition. In this study 75.4% of the children were well nourished with MUAC values above 13.5cm, a total of 24.6% were malnourished with MUAC values below 13.5cm. A study carried out in Akure had MUAC values below 13.5cm in 6.0% of the children. This value is lower than that obtained in the current study but similar in the sense that majority of the children in both study populations were well nourished and had MUAC values above 13.5%. Up to75.4% children in this study and 94.0% in the study carried out in Akure.[17] The mid upper arm is less subject to error compared to weight for height in measuring under nutrition.

CONCLUSION

Based on the findings of this study, it has been concluded that only 2.8% of households in mainland Local Government Area were food secure, with the remaining percentage experiencing varying degrees of food insecurity, ranging from mild, moderate to severe food insecurity. Socio economic factors such as level of education, occupation and household income have a direct relationship to the level of household food security. Socio demographic factors such as age, gender, marital status, and household size did not influence household food security. From the study, 8.7% of the children had growth faltering also known as underweight, a total of 45.4% of the children have stunting and wasting was seen in 1.7% of all the children. Majority of the children have normal z-scores for weight for age (WAZ) at 68.8% and weight for height (WHZ) at 98.3%. Most of the children had normal MUAC value of 75.4% with 24.6% of them being malnourished.

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