ASSESSMENT OF FOOD SECURITY AMONG FARMING HOUSEHOLDS IN AGRARIAN COMMUNITIES OF OLUYOLE AREA OYO STATE, NIGERIA

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ABSTRACT

This study assessed food security status among farming households in Oluyole area of Oyo state, Nigeria. Multi-stage sampling technique was used to select 120 farmers. Data were collected with the aid of interview schedule and analyzed using frequency counts, percentages, mean and Logistic regression analysis. The result revealed that 60.8% of the farmers were male, 33.3% had secondary school education and the mean age was 51 years with an average household size of 6 persons. Findings also revealed that 86.7% of the households were food insecure while only 13.3% were food secure, some of the factors responsible for food insecurity with their mean score include unavailability of locally produced food (2.77), changes in the price of food items (2.22) and household income (2.56). Result of hypothesis testing revealed that there is a significant relationship between sex (β=-1.765, $p<0.05$), years of farming (β=-0.121, $p<0.05$), household income (B=0.012, $p<0.05$) and food security among the farming households. Based on the findings, it was therefore concluded that most of the farming households were food insecure. Therefore, it is recommended that efforts should be made at improving access of farming households to production resources by the government or non-government organizations, since they are involved in the agricultural value chain. Farmers of all gender should be exposed to cost-effective food production, processing and storage strategies. The government should be firm on policies that will encourage local food production if the attainment of food security will not be a mirage in Nigeria.

Keywords: Food security status, locally produced food, availability, accessibility and farming households

INTRODUCTION

The problems of hunger and food insecurity have global dimensions and it requires urgent concerted actions to prevent dramatic increase of hunger in some regions considering the anticipated increase in the population of the world and the pressure on natural resources (FAO 1996). Food security is a condition in which all people at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets people dietary needs to live an active and healthy life (FAO, 2007). According to Oni *et al*, (2011) food security is the availability of food throughout the year to sustain household protein, energy, and other nutritional requirements. Hart (2009) pointed out that most definition of food security includes the phrase "at all times" and as such does not distinguish between different durations and intensities of food insecurity. A household is considered food secured when it has access to the food needed for a healthy life for all its members (adequate in terms of quality and culturally acceptable) and when it is not at risk of losing such success (Alaja *et al* 2011). The world's population can be divided into three groups considering food security status: the first and the largest of food secured group includes those who are sure of having enough to eat to enable them to live an active and healthy life, the second group comprises those who are vulnerable to changing economic conditions and thus may not always have enough to eat; their food security is at risk, while the third group are the absolutely poor, those who frequently consume less than the amount needed for healthy living (Joachin, 1991).

However, Nigeria attained self- sufficient in food production and a net exporter of food to other regions of the continent in the 1950s and 1960s. Due to reduction in food production in the country, the government embarked upon massive food importation in order to satisfy excess demand over the food supply. Stamoulis *et al* (2004) opine that the persistence of hunger in the developing world means that ensuring adequate and nutritious food for the population will remain the principal challenge in policy making in the future. World Bank (2012) estimates the population of Nigerian to be above 160 million people, the largest in Africa and almost accounting for 47% of West Africa's total population. Indeed, factors such as desertification, climate change, and erosion are also impacting on the already diminishing resources and further threatening food production. Obamiro *et al* (2005) report that the problem of food insecurity especially during the hungry period among rural households in Nigeria is long-standing. The level of food insecurity has continued to rise steadily since the 1980s. It rose from about 18% in 1986 to about 41% in 2004. The national per capital growth in the production of major food items in Nigeria has not been sufficient to satisfy the demand for an increasing population, several reports show a consistent increase in the production of staple food in the country especially between 1999 and 2005, but there is still an observable gap between food demand and food supply (Sanusi *et al*., 2006).

Despite all the various agricultural programmes and projects set up by the government in the country in order to reduce the rate at which food insecurity grow in the country, many of the populace are still not food secured. The programs such as Agricultural Development Project (ADP); Operation Feed the Nation, (OFN); Green Revolution (GR) in the 70s; Directorate of Food, Road and Rural Infrastructure, (DFRRI) in the 80s; National Agriculture Land Development Authority,(NALDA) in 90s, National Fadama Development Project,(NFDP); Nigeria Agricultural Cooperative and Rural Development Bank,(NACRDB); National Special Programme on Food Security, (NSPFS); Commodity Marketing and Development Companies, (CMDC),Presidential Initiatives on selected crops and 7 Points Agenda with emphasis on Food Security.

The primary objective of the study was to assess the food security status among farming households in Oluyole area of Oyo State, Nigeria. Specifically, the study determined and characterised the food security status, assess factors responsible for food insecurity and described the socio-economic characteristics of the farming households in the study area. The hypothesis tested was to establish a significant relationship between selected socio-economic characteristics and the food security status of the farming households.

METHODOLOGY

Study area - This study was carried out in Oluyole Local Government Area of Oyo State in the southwestern geopolitical zone of Nigeria, It has an area of 629 km² and a population of 202,725 (NPC, 2006). It shares boundaries with Ibadan South West, Ibadan South East, Ona Ara and Ido Local Government Areas. The study area has distinct dry and wet seasons with high relative humidity. The vegetation type is rainforest. Onigambari forest reserve is located in the area and it is also a source of livelihoods for the people in the study area.

Sampling procedure and data collection - A multistage sampling technique was used to select 120 respondents for the study. The selection procedure was as follows: The first step was the random selection of one zone out of the four zones in Oyo State Agricultural Development Program. The second stage was the random selection of three extension blocks in the selected zone. At the third stage, simple random sampling was used to select two extension cells to make six cells and the fourth stage include a random selection of two communities in each of the cells. Thus a total of twelve communities were selected for the study. Finally, from the frame of the list of farmers in each community, a proportional random selection was carried out to select farmers respectively from the communities which added up to 120 farmers. An interview schedule was used to elicit information from the farming households for the purpose of the study.

Measurement of variables - The factors responsible for food insecurity in the households were measured at an ordinal level on 3 point rating scale format of major factor (3), minor factor (2), not a factor (1). The household food security status was measured using the USDA approach for the analysis of farm household food security at an ordinal level on three-point rating scale format of often true, sometimes true and never true. For these questions, both often true and sometimes true are considered as affirmative responses because they indicate that the condition occurred at some time during the year and are coded as 1 while never true as 0. The maximum obtainable score was 16 while the minimum obtainable score was 0. The maximum and minimum obtainable score were added together to a resultant score. The resultant score was divided by 2 to get an average score of 8. Any household that has a score below the average score was categorised as food insecure household, and any household that has a score above the average score was categorised as food secured household.

Data analysis - Data were analyzed using descriptive statistics such as frequency counts, percentages, mean and Binary Logistic regression to test the hypothesis.

The Binary Logistic regression model

$$\text{Prob } (Y=1/X) = \ln (Pi/1- Pi) = \beta_o + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9$$

Pi = Probability that farming households are food secure

Y = 1 if household is food secure, 0 if household food insecure

β_o = constant

X1 = sex (male=1, female=0)

X2 = marital status (single=1, married=0)

X3 = religion (Islam=1, Christianity=0)

X4 = age (measured at interval level as actual year of the respondents)

X5 = estimated monthly income (measured at interval level as estimated monthly income of the respondents)

X6 = household size (measured at interval level as the number of persons living together in a household)

X7 = farm size (measured at interval level in acres)

X8 = educational status (No formal education=1, Primary education=0, Secondary education=0, Tertiary education=0)

X9 = years of farming

RESULTS AND DISCUSSION

Socioeconomic characteristic of respondents - Entries in Table 1 showed the socio-economic characteristics of the respondents. The

result revealed that 60 percent of the respondents were male. According to Ziervogel *et al* (2006), men have easier access to farmland through paternal inheritance than women in Nigeria. Based on this, male-headed households are expected to have more access to farmland for food production. Less than one-third (25.8%) of the farmers were in the age category of 50 – 59 years of age. The mean age was 51 years. Similarly, the average household size was 5 persons. Household size is an important factor in farming household because the larger the size, the more likely they could supply labour needed for agricultural activities. Findings also revealed that 33.3% of the farmers had secondary education. Education is believed to enhance knowledge and comprehension of new farm technologies, practices and systems which in turns improve households' food security status. This agrees with Babatunde *et al*, (2007) who posited that education is a social capital, which could impact positively on a household's ability to access and adopt innovations as well as assisting them to take good and well–informed production and nutritional decisions. Furthermore, the result of the analysis (Table 1) also revealed that the average farm size of the farmers was 2.41 acres, which indicated that the respondents were subsistence farmers. Akinsanmi and Doppler (2005) posited that the size of farmland that a household cultivates directly affects their production and hence food security. Most (92.5 %) of the farmers earn less than fifty thousand naira per annum that is, $166.6 per annum and less than $1 per day)from farming ventures. This showed that they are a low income earner. Thus, the farmers will require additional source of fund to be able to afford sufficient food for the households. This agrees with Olagunju *et al*., (2012) who posited that a low-income household is more likely to suffer food shortages than a high- income household. The amount of money available determines the households' purchasing power and hence the quantity of food items they can buy. This also has implications in their quality of living.

Table 1: Distribution of socio-economic characteristics of the respondents (n=120)

Variables	Frequency	Percentage	Mean	SD
Sex				
Male	73	60.8		
Female	47	39.2		
Marital status				
Single	76	63.0		
Married	44	37.0		
Religion				
Islam	61	50.8		
Christianity	59	49.2		
Age (Years)				
<30	16	13.3		
30-39	9	7.5		
40-49	26	21.7	51	14.66
50-59	31	25.8		
60-69	23	19.2		
70-above	15	12.5		
Estimated monthly income (Naira)				
<50,000	111	92.5		
51,000-100,000	8	6.7	29,888	18,449.65
>100,000	1	0.8		
Household size (persons)				
1-5	63	52.5		
6-10	55	45.8	5	2.39
11-above	2	1.7		
Farm size (acres)				
<1	1	0.8		
1-4	101	84.2	2.41	0.99
>4	18	15		
Level of Educational				
No formal education	22	18.3		
Primary education	31	25.8		
Secondary education	40	33.3		
Tertiary education	27	22.5		
Years of farming				

Variables	Frequency	Percentage	Mean	SD
<20	69	57.5		
21-40	33	27.5	18	12.34
>40	10	15.0		

Source, Field Survey (2016)

Food security status of the respondents - The result of the study (Table 2) showed that majority (87.5%) of the farmers revealed that they ate less than they should, 82.5 percent said that they were ever hungry and did not have anything to eat, while the same percentage of the respondents were worry that food stock will run out before they get another to eat. Another startling result was the experienced inadequate food supply in the household of many respondents (79.2%) which resulted in many of the adults to skip meals or cut the size of their usual meals (76.7%) in many households. The consequences include loss of body weight (73.3%). This is an indication that food supply and availability were major concerns in the study area and good indicators of the severity of food insecurity status of the farming households. This agreed with the finding of Abur (2014) who posited that many households were facing food insecurity and skip meals to ensure the availability of another day maintenance ration.

Furthermore, the result of the study revealed that more than half (57.5%) of the children in the farming households also skipped meals as a result of inadequate fund to purchase food by their parents. This agreed with Coleman-Jensen *et al*. (2016) that reports that a food-insecure household is one in which access to adequate food is limited by a lack of money or other resources. The findings further showed about one – third (35%) had nothing to eat in a whole day. This calls for urgent attention. Gitterman *et al*., (2015) opined that households with children are nearly twice as likely to be food insecure than households without children.

Table 2: Distribution of food security status of the respondents (n=120)

Variables	Affirmative F (%)	Negative F (%)	Mean
I ate only one meal per day	105 (87.5)	15 (12.5)	0.88
I have enough resource to acquire enough food	102 (85.0)	18 (15.0)	0.85
I worry that food stock will run out before I get another to eat	99 (82.5)	21 (17.5)	0.83
I was hungry but did not eat	99 (82.5)	21 (17.5)	0.83
I can afford to feed my children balanced meals	97 (80.8)	23 (19.2)	0.81
I often experienced inadequate food supply in my household	95 (79.2)	25 (20.8)	0.79
Adult in my household skip meals or cut the size of their usual meals	92 (76.7)	28 (23.3)	0.77
I lose weight because there was not enough food to eat	88 (73.3)	32 (26.7)	0.73
I supplement my children's feed with low cost foods	82 (68.3)	38 (31.7)	0.68
I and other adults in my household did not eat for a whole day because there was not enough money to buy food	78 (65.0)	42 (35.0)	0.65
My children were not eating enough food because I couldn't afford to purchase the right quantity of required food	77 (64.2)	43 (35.8)	0.64
I cut the size of any of my children's meal because there was not enough money for food	71 (59.2)	49 (40.8)	0.59
The children skip meals because there was not enough food to eat	69 (57.5)	51 (42.5)	0.58
Children were ever hungry but you just could not afford more food	59 (49.2)	61 (50.8)	0.49
I can afford to eat balanced meal	56 (46.3)	65 (53.7)	0.46
The children ever not eat for a whole day	42 (35.0)	78 (65.0)	0.35

Source: Field survey (2016)

Categorisation of food security status of the respondents (n=120)

The results of the study (Table 3) showed the food security status of the respondents. The results revealed that majority (86.7percent) of the farming households in the study area were food insecure, it was 13.3% of the respondents that could be categorised as food secured. This implies that there is a high prevalence of food insecurity in Oluyole LGA, a typical agrarian community in Oyo State, by extension, it could be deduced that many rural households in the state were food insecure. Children from food insecure households are more likely to have poor growth attainment,

recurrent infections, inadequate energy and nutrient intakes, compromised learning ability and psychosocial problems (Alaimo *et al.*, 2002; Kaiser *et al*., 2002; Oh and Hong, 2003; and Reid, 2000). This agreed with FAO (2010) that reported households are food insecure when, members of the households, at all times, lack physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

Table 3: Distribution of categorisation of food security status of the respondents

Variables	Score range	Frequency %
Food insecure	8-16	104 86.7
Food secure	0-7	16 13.3

Factors responsible for food insecurity

The result of the study revealed four important factors that were responsible for food insecurity in the study area. The factors include food availability, sustainability, accessibility, and utilisation. The food availability was measured by factors which include unavailability of local production of food consumed in the community with a mean score of 2.77, lack of storage food during surplus (2.71) and lack of assistance provided during food inadequacies (2.71).The importance of food availability was corroborated by Aliber (2009) who posited that immediately after harvesting most rural households are food secure as they have enough food from their own production. Therefore facilities must be provided to upscale level of food production of farming households as well as the provision of processing and storage facilities at affordable prices. Regular training should be carried out to expose the farmers to new storage techniques. FAO (2010) pointed out that ending hunger and achieving food security requires sustainable intensification of food production, encouraging sustainable food consumption and reducing food losses and waste.

Food sustainability was another factor that could be responsible for food insecurity. This was measured in terms of weather variability to support agricultural production, Changes in the price of food item, unfavourable policies for food production, preservation and storage facilities, and economic factors on the trade of food item. The mean score for these variables were 2.25, 2.22, 2.21 and 2.07 respectively. These factors could affect the quantity of agricultural produces the farming households can produce. Government policies that support food importation will have a negative impact on local food production. Therefore, the government should be firm in keeping food importation to the barest minimum in order to encourage local food production and reduce the vicious cycle of poverty which engulfed the farming households. This agreed with FAO (2010); Buttriss and Riley (2013) that opined that sustainable food production is key to assuring food security. Food security and food sustainability are then strongly linked.

In addition, the study revealed that food accessibility component of food security was hindered by low level of household income of the farmer (mean=2.56) and hence low purchasing power of the households. Similarly, transport and market infrastructure for food supply system affect the household access to food thereby limit their ability to access food required by the households. Finally, the study identified food utilisation capability of the house as important in the food security status of farming households. Important variables used to assess the food utilisation (Table 4) along with mean score in descending order of magnitude include Poor orientation of rural people on importance of certain food items (2.62), Poor food processing practices (2.11), Poor hygiene and manufacturing practices (2.11) and Poor diet quality and diversity (2.03). Even when the food is available the utilisation is also important in order for the household to achieve food security so as to reduce waste and to obtain better nutritional value and vitality. Therefore, concerted efforts must be made so that the rural households were empowered to overcome these elements of food utilisation described earlier on. Therefore, limited access to nutritious food in the study area could be attributed to poor orientation on specific importance of some foodstuffs, and poor food processing techniques. The findings agreed with International Food Policy Research Institute (2011) that limited availability of nutritious foods, economic constraints and lack of knowledge and information. This hindered food utilisation and hence the food security of rural households.

Table 4: Distribution of factors responsible food insecurity in the households (n=120)

Variables	Major factor		Minor factor		Not a factor		Mean
	Freq	%	Freq	%	Freq	%	
Food Availability							
Unavailability of local production of food consumed in the community	98	81.7	16	13.3	6	5.0	2.77

Lack of storage of food during surplus of harvest	95	79.2	15	12.5	10	8.3	2.71
Lack of food assistance provided during food inadequacies	93	77.5	19	15.8	8	6.7	2.71
Regular supply of food items not ready found available in community	86	71.7	24	20.0	10	8.3	2.63
Food Sustainability							
Weather variability to support agricultural production	43	35.8	64	53.3	13	10.8	2.25
Changes in the of food item	46	38.8	54	45.0	20	16.7	2.22
Unfavourable policies for food production preservation and storage	49	40.8	47	39.2	24	20.0	2.21
Economic factors on the trade of food item	39	32.5	51	42.5	30	25.0	2.07
Food Accessibility							
Household income of the farmer	76	61.7	38	31.7	8	6.7	2.56
Transport and market infrastructure for food supply system	74	61.7	38	31.7	8	6.7	2.55
Lack of purchasing power of rural household	60	50.0	48	40.0	12	10.0	2.40
Food Utilisation							
Poor orientation of rural people on the importance of certain food items	85	70.8	25	20.8	10	8.3	2.62
Poor food processing practices	48	40.0	37	30.8	35	29.2	2.11
Poor hygiene and manufacturing practices	31	25.8	42	35.0	47	39.2	2.11
Poor diet quality and diversity	40	33.3	43	35.8	37	30.8	2.03

Source: Field survey (2016)

Test of hypothesis

The result of the hypothesis testing (Table 4) revealed that there is a significant relationship between; household income (β=0.012, $p<0.05$) and food security status of the respondents. Thus a unit increase in the income level of the farmers will lead to a corresponding increase in household food security status. The income of the farmer will determine his ability to adopt innovations, hire farm machines and equipment, pay for hired labour in order to increase agricultural production and buy foodstuffs if the need arises. This agreed with Aliber (2009); (Olagunju *et al*. (2012) who stated that there was a strong relationship between a household's income and household food security status. Similarly, the sex of the farmer was found to have an inverse relationship with household food security status. Men have access to land, credit, exercise control on social capital and most of the resources required for agricultural production than women. Men also have the physical energy to cultivate or operate most of the tedious activities of farming and can work in terrain such as Fadama than women. The implication of this is that women are more predisposed to the challenges of food insecurity than men. This agrees with Oni *et al*, (2011) who posited that access to social capital is one of the determinants of household food security status. Since for security has no sex boundary, the best option is to provide enabling environments such as provision of land cultivation equipment and herbicide across the sex. These will eliminate drudgery and encourage women to engage in productive agricultural ventures.

Table 4: relationship between socio-economic characteristics of the respondents and household food security status

Variables	β	S.E	Wald	df	Sig	Decision
Age	.028	.040	.511	1	.475	N.S
Sex	-1.765	.721	5.999	1	.014	S
Marital status	.608	.898	.459	1	.498	N.S
Household size	-.181	.243	.553	1	.457	N.S
Religion	1.417	.728	3.787	1	.052	N.S
Educational status	-.784	1.198	.428	1	.513	N.S
Farm size	-.817	.607	1.809	1	.179	N.S
Years of farming	-.121	.060	4.090	1	.043	S
Household income	0.012	.000	6.324	1	.013	S
Constant	-1.507	1.492	1.020	1	.312	

CONCLUSION AND RECOMMENDATIONS

Based on the findings, it was therefore concluded that most of the farming households in the study area were food insecure. Factors responsible for food insecurity were unavailability of locally produced food consumed in the community, lack of adequate processing and storage facilities for food during surplus, weather variability to support agricultural production, changes in the price of food item. There was also a glaring evidence of a low level of household income. If the rural agrarian communities that were supposed to produce food for the urban communities were food insecure, then, the future is blinking for the attainment of food security in the study area and the country at large. Therefore, it was recommended that efforts should be at improving access of the farming households to production resources by the government or non-government organization. Farmers as a whole should be exposed to cost-effective production, processing and storage strategies for locally produced food. The government should be firm on policies on banning of food importation in order to encourage local food production.

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