THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

Determinants of Food Security Status among Farming Households in Nsit Atai Local Government Area of Akwa Ibom State, Nigeria

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Abstract

This Study examined the determinants of food security status among farming households in Nsit Atai Local Government Area of Akwa Ibom State, Nigeria. This was done to make available data for policy formulation, programme planning and informed decision making. Multi-stage sampling technique was used to select 150 respondents for the study. Data were collected using structured questionnaire and analysed using frequencies, percentages, mean, food security index and Probit Regression. Results show that mean age of the respondents was 53.62. Also, 60.00% were married, while 61.33% of the households were headed by males. Average household size was 6, while only 14.47% of the respondents had no formal education. Most respondents had farming as their primary livelihood activity, with ₦27, 500.00 as mean monthly income. Only 28.00% of the respondents were members of co-operative societies and 76.67% had no access to credit. Many households (58.67%) were food secure. Household size, age and educational status of the household heads were significant factors affecting food security status of the households in the area. Major constraints to attainment of food security in the area were high food prices, poor access to credit and low non-farm income, with ranks of 1st, 2nd and 3rd respectively. It is therefore recommended that government should subsidize food materials to reduce cost and enhance accessibility by the households. Also, development agencies, non-governmental organizations and individuals should embark on enlightenment campaign to encourage a reduction in household sizes among the farmers. The farmers should be informed of the need to join cooperative societies in order to have access to loan facilities. Policies should be aimed at ensuring that institutional credit sources reduce the current high interest rates on loans and the procedural difficulties in securing loans, so as to encourage farmers to access such credit facilities for increased agricultural production hence, food security.

Keywords: Determinants, food security, farming households, food availability, constraints

1. Introduction

Food is one of the basic needs of man and a fundamental requirement for sustenance of life. It is required for growth, development and other metabolic activities of the body. Also, the contributions of good quality food to the health of members of the farming household and other consumers range from tissue building/repairs to prevention of nutritional diseases and disorders (Ohlhorst, Russell, Bier, Klurfeld, Mein, Milner, Ross, Stover and Konopka, 2013). Therefore, sufficient foods in quantity and quality must be produced to feed and keep members of the household and the teeming population healthy. A farmer must first be healthy to work at optimum level in the production of the required food materials. This is because the health of the farmer and other members of the farming households affects the quantity and quality of farm labour, especially in areas where family labour is mostly used in agricultural production. According to Okoro, Etuk and Nathaniel (2019), the farmer is distracted from farm work and the quantity and quality of family labour reduced if a member of the farming household is sick.

Though the role of food in human existence and healthy living is well acknowledged, some households do not have sufficient quantity of the required food. This is because food demand has always lagged food supply. Moreover, agricultural production does not keep pace with population growth, thereby creating a gap between the quantity of food supplied and the quantity demanded (Frona, Szenderak and Hurangi-Rakes, 2019). Some households therefore experience food shortage and hunger and members sometimes experience nutritional diseases or disorders. Households that cannot access the right quantity and quality of food required may face some level of malnutrition and are said to be food insecure.

Food security according to FAO (2006) is a situation that all people at all times have access to sufficient, safe and nutritious food to maintain a healthy and active life. It states further that to have a food secure community or household, food must be available, accessible, and properly utilized. Food is said to be available when enough, safe and nutritious food are produced or imported into the country. But food accessibility is however achieved when various households or individuals at all times have the economic power to purchase the required food, while food utilization involves the intake of food in sufficient quantity and quality.

A household is said to be food insecure when its minimum calorie requirements are not met or members of the household show signs of nutrient deficiencies. According to Gahuka (2011) food security is best assured when food is locally produced and made available on a continuous basis at an affordable price. Food insecurity may be caused by socio-economic environment, non-availability of food, lack of access to food and improper utilization of food (Khan, Azid and Toseef, 2012). However, socio-economic factors that cause food insecurity may differ from person to person.

Globally, food insecurity is one of the major problems afflicting many countries, especially developing nations. According to FAO, IFAD, UNICEF, WFP and WHO. (2019), about 2 billion people are experiencing some level of food insecurity. Also, out of the total world population of about 7,632.8 million people, about 821.6 million are undernourished. According to the report, there is a rising degree of hunger in almost all sub-region of Africa. Moreover, about 13.4% of the total population of Nigeria was estimated to be undernourished between 2016 and 2018. These may jeopardize the achievement of the Sustainable Development Goal (SDG) aim to eradicate hunger, achieve food security and improve nutrition and promote sustainable agriculture by year 2030. According to Ubokudom, Namso, Etowa and Kesit (2017), many households in Akwa Ibom State are food insecure, especially the rural farming households where livelihood and food security are dependent mostly on agriculture.

There is a persistent food insecurity among households in Nigeria and many households in Akwa Ibom State are also food insecure. Moreover, food security at the national level may not translate to food security at the household level. Therefore, it is essential that significant increase in agricultural productivity be supported and achieved at the household level. This can only be achieved if factors affecting food production and food security status of the households are empirically determined. But to date, household level research on food insecurity challenges in Akwa Ibom State is limited. This study therefore assessed the determinants of food security in Nsit Atai Local Government Area of Akwa Ibom State, Nigeria. Specifically, the study assessed the food security status, examined the socio-economic factors influencing food security and ascertained the constraints to attainment of food security in the area.

2. Methodology

The study was carried out in Nsit Atai Local Government Area of Akwa Ibom State, Nigeria. The local government area is located in the south eastern part of the state and is bounded by Uruan, Okobo and Ibesikpo Asutan Local Government Areas. It lies on latitude 4°51'N and longitude 8°0'E. According to 2006 population census figures, Nsit Atai has a land mass of 17,000 square kilometres, with a projected population of 103,100 people as at 2016 (Brinkhoff, 2017). Major agricultural products in the area include cassava, palm produce and plantain. The main livelihood activities of the people are farming and trading. The land is generally fertile, but the fertility is low due to continuous cropping which results in low productivity and low income among the farmers.

All farming household in Nsit Atai Local Government Area made up the study population. A multi-stage sampling procedure was used to select respondents for the study. In the first stage, Simple Random Sampling method was used to select 10 villages from the 62 villages that make up the local government area. In the second stage, households were identified through household listing and Systematic Sampling method was used to select 15 farming households from each of the selected villages, making a total of 150 farming households. All heads of the sampled households were selected for interview. Primary data were collected through the use of structured questionnaires and the data were analysed using frequency, percentage, mean, food security index and Probit regression.

Food security index estimation was done using household food expenditure adopted from Omonona and Agoi (2007). This method was employed to classify the respondents into food secure and food insecure households. The formula is given as:

$$F_i = \frac{\text{Per capita monthly food expenditure for the } i\text{th household}}{^{2/3} \text{ mean per capita monthly food expenditure of all households}}$$

Where F_i = Food security index.

When $F_i \geq 1$, the i th household is food secure,

When $F_i < 1$, the i th household is food insecure.

A household is therefore said to be food secure when its per capita food expenditure is at least two-thirds of the mean per capita monthly food expenditure of all households. On the other hand, a household is food insecure when its per capita monthly food expenditure is less than two-thirds of the mean monthly per capita food expenditure of all households.

In order to determine the socio-economic factors influencing food security, a Probit regression model was used which is given as follow:

$$Y_i = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 \dots + B_n X_n + e$$

Where Y_i = Food security status
 B_0 = intercept
 $B_1 - B_n$ = Coefficients
 e = error term

X_1 (EDUHH) = Level of Educational attainment of household head (Years)

X₂ (AGEHH) = Age of the household head (Years)

X₃ (MSTHH) = Marital Status (1 if married and 0 otherwise).

X₄ (INCOME) = Income of the household head (measured in Naira)

X₅ (HHSIZE) = Household size (Number of persons living in the household)

X₆ (FAMSIZE) = Total area of farm land cultivated by the household (measured in hectares)

X₇ (SEXHH) = Sex of the household head (1 if male and 0 otherwise).

Means and ranks were used to assess the constraints to attainment of food security by the households. A weighted mean value of 2.19 was used as a benchmark to rank items which describe the major or severe constraints to attainment of feed security by the households. A mean score of 2.19 and above indicates a major or severe constraint, while a mean score of less than 2.19 indicates a minor or mild constraint.

3. Results and Discussion

3.1. Socio-economic Characteristics of the Respondents

Table 1 shows that the mean age of the respondents was 53.62. This implies that the respondents were still energetic and in their active productive age. This could boost agricultural productivity if their efforts are channeled to agricultural production. The results also show that 61.33% of respondents were males, while 38.67% were females. The finding is corroborated by the observation by National Population Commission (2019) that majority of households in Nigeria are headed by men.

According to the results, 60.00% of the respondents were married, while singles, widows/widowers and divorcees accounted for 40.00%. This therefore suggests that the married were more involved in farming may be because of the need to produce enough food for the family. This finding agrees with that of Asa and Archibong (2016), who reported that majority of farmers in the rural areas of Akwa Ibom State are married. Educational status of the respondents shows that only 14.67% of the respondents were without formal education. Educational level of the respondents is additional factor which is thought to influence food security status of the households. The awareness of food groups necessary for human growth and wellbeing may be dependent upon the level of education of the household head. The knowledge of these food groups ultimately influences nutritional decisions that can enhance quality food intake.

Table 1 also shows that the modal household class was 4 – 6 people (62.00%), with a mean household size of 6. The household size may affect food security status of households in the area because according to Asa and Ebong (2016), food security decreases with increase in household size. Moreover, many respondents (54.00%) had farming as their primary livelihood activity, though many may diversify to other activities. Farming as the primary livelihood activity may mean more quantity of own food produced which could enhance more food availability. This is in line with the observation of Osuji, Ehirim, Balogun and Onyebinama (2017) who noted that there is a positive correlation between the quantity of own food produced and food security.

Results also show that the average monthly income of the respondents was ₦27,500.00. However, as monthly income of the household increases, and the households invest in more livelihood or income generating activities, purchasing power and the probability of household food security is also expected to increase. Consequently, increased household income could positively influence food production and access to food in quantity and quality.

Characteristics	Frequency	Percentage (%)	Mean
Age			
21 -40	54	36.00	
41 – 60	58	38.67	53.62
≥ 61	38	25.33	
Sex			
Male	92	61.33	
Female	58	38.67	
Marital status			
Single	28	18.67	
Married	90	60.00	
Widow/widower	25	16.65	
Divorced/separated	7	4.67	
Educational level			
Informal education	22	14.67	
Primary education	53	35.33	
Secondary education	49	32.67	
Tertiary education	26	17.33	
Household size			
1 – 3	24	16.00	
4 – 6	93	62.00	6
≥ 7	33	33.00	

Characteristics	Frequency	Percentage (%)	Mean
Primary livelihood activity			
Farming	81	54.00	
Agro-product processing	10	6.67	
Trading	26	17.33	
Civil service	12	8.00	
Artisan	21	14.00	
Monthly income (₦)			
≤ 20,000	67	44.67	
21,000 – 30,000	43	28.67	27,500.00
31,000 – 40,000	26	17.33	
≥ 41,000	14	9.33	

Table 1: Socio-Economic Characteristics of the Respondents

Source: Field Survey, 2019

3.2. Farm Related Characteristics of the Respondents

Table 2 shows that 48.00% of the respondents had various degrees of extension contact, while 52.00% were not visited at all by any extension agent. These contacts could be considered as being low probably as a result of the inadequate funding of extension by government in Nigeria. This may reduce the chances of households having access to better crop production techniques, improved inputs as well as other production incentives provided by extension agents. This could pose constraints to households achieving food security.

Result on cooperative membership shows that 28.00% of the respondents were members of cooperative societies. Cooperative membership offers members access to agricultural inputs, modern technologies and food items at affordable prices. However, cooperative membership in the area was low and may deny the respondents the benefits associated with membership of the organisation. This result agrees with the finding of Anigbogu, Agbasi and Okoli (2015) who observed that cooperative membership is of immense benefits to farmers. The table also shows that only 23.33% of the respondents had access to credit facility in the area. It is expected that low access to agricultural loans will adversely affect domestic food production. But increased credit gives the household opportunity to get involved in more income generating activities which can lead to increased revenue and purchasing power of the household. This is corroborated by the observation of Osuji, Ehirim, Balogun and Onyebinama (2017) that access to credit is one of the determinants of food security in Imo State.

Distribution of the households by farm size shows that only 29.33% of the households had farm sizes of 2 or more hectares. Farm size may be a reflection of own-food production status and income of the farming households. It is believed that increase in farm size will result in increased food production, which ultimately increases the likelihood of household food security. According to Anigbogu, Agbasi and Okoli (2015) the size of farmland that a household cultivates directly affects her food production, hence food security. Moreover, 54.67% of the respondents were subsistence farmers implying that majority of the farmers in the area produce for household consumption only. This suggest that the quantity of output is small which may have a negative effect on food availability in the area.

Characteristics	Frequency	Percentage (%)
Extension Contact		
Fortnightly	11	7.33
Monthly	15	10.00
Quarterly	20	13.33
Yearly	26	17.34
No visit	78	52.00
Membership of Cooperative		
Yes	42	28.00
No	108	72.00
Access to Credit		
Yes	35	23.33
No	115	76.67
Farm Size (hectare)		
≤ 2	118	78.66
3 – 4	28	18.67
≥ 5	4	2.67
System of Farming		
Subsistence Purpose	82	54.67
Commercial purpose	13	8.66
Both Purposes	55	36.67

Table 2: Respondents' Farm Related Characteristics

Source: Field survey, 2019

3.3. Food Security Status of the Farming Households

Based on the food security index, farming households in the area were categorized into food secure and food insecure as shown in Table 3. The result reveals that 58.67% of the households were food secure, while 41.33% were food insecure. The finding corroborates previous work on food security in Akwa Ibom State by Asa and Archibong (2016) which observed that most farming households in Abak Local Government Areas of the state were food secure. Asa and Ebong (2016) also obtained similar result. However, this finding contradicts Ubokudom, *et al.*, (2017) who reported that most rural household, in Akwa Ibom State are food insecure.

Status	Food security index	Frequency	Percentage %
Food secure	1.0 and above	88	58.67
Food insecure	0.1 – 0.9	62	41.33

Table 3: Food Security Status of Rural Farming Households

Source: Computed from SPSS Version 22.0

3.4. Factors Affecting Food Security Status of Farming Households in the Area

Table 4 reveals that age, education, household size and farm size were statistically significant determinants of food security status of farming households in the area, while sex, marital status and income were not statistically significant determinants. Age of the household heads significantly and positively influences the farming households' food security status. The results conform to the findings of Anyaeji and Arene (2010) who argue that older household heads were more food secure than the younger ones.

Educational level of the household head had a positive and significant relationship with household food security. The positive relationship between educational level of household heads and food security implies that households with educated household heads are more likely to be food secure than those with uneducated household head. The possible explanation to this is that literate household heads may employed innovations and/or adopted new technologies in their farms, and this can improve productivity, thereby making the household food secure. In collaboration, Mango, Zamasiya, Makate, Nyikahadzoil and Siziba (2014) observed that household heads with high level of education can build capacity to enhance food security.

Household size has a negative and significant relationship with household food security at 1% probability level. This means that the larger the household size, the more likely they are to be food insecure. Increase in household size increases the number of consumers putting pressure on household resources particularly food and household with high dependency ratio are prone to food insecurity. The result agrees with the observation by Asa and Ebong (2016) that there is a negative correlation between increase in household size and food security.

Farm size is a significant and positive determinant, indicating that as farm size increases, more food is produced both for consumption and sale to earn more money, resulting in increased food security. The result is in line with Anigbogu, Agbasi and Okoli (2015) who reported that an increase in farm size leads to an increase in quantity produced and when production increases, households are food secure.

Variable	Coefficient	Standard Error	Z	Significant
Age	0.010	0.003	3.172***	0.002
Sex	-0.049	0.084	-0.581	0.561
Education	0.025	0.004	5.660***	0.000
Marital Status	-0.076	0.050	-1.534	0.125
Income	0.000	0.000	-0.138	0.890
Household size	-0.114	0.021	-5.455***	0.000
Farm Size	0.044	0.019	2.335	0.020
Intercept	-2.427	0.173	-14.018	0.00
Observations 150				
MC Fadden R2 0.49				

Table 4: Socio-economic Factors Affecting Food Security Status of the Farming Households

Source: Computed from SPSS Version 22.0. Note: *** = Significant at 1%

3.5. Constraints to Attainment of Food Security in the Area

The most serve constraints to attainment of food security in the area included high food prices (3.01), poor access to credit (2.65) and low non-farm income (2.52), with ranks of 1st, 2nd and 3rd respectively, while poor processing facilities (1.70), shortage of farm labour (1.68) and poor nutrition education (1.66), with ranks of 8th, 9th and 10th were identified as mild constraints. The high food prices have also been identified by FAO *et al.* (2019) as one of the major causes of food insecurity in Nigeria. Moreover, Osuji, Ehirim, Balogun and Onyebinama (2017) and Anigbogu, Agbasi and Okoli (2015) noted that access to credit is one of the determinants of food security. Therefore, to ease food insecurity situation in the area, these constraints should be carefully considered with a view to alleviating them.

Constraints	SA	A	D	SD	Mean	Rank
High food prices	82	55	10	03	3.01	1 st
Poor yield of crops	56	42	22	30	2.28	5 th
Low non-farm income	60	30	30	30	2.52	3 rd
Limited access to land	20	25	30	75	2.37	4 th
Poor processing facilities	45	55	23	27	1.70	8 th
Poor nutrition education	40	51	53	07	1.66	10 th
Poor storage facilities	60	41	21	28	2.21	6 th
High post-harvest loses	70	30	25	25	1.89	7 th
Shortage of farm labour	40	40	20	50	1.68	9 th
Poor access to credit	63	52	35	00	2.65	2 nd

Table 5: Constraints Faced by the Farmers in Attaining Food Security

Source: Field survey, 2019

4. Conclusion and Recommendations

Most farming household heads in the area were males, with formal education and farming as their primary livelihood activity. Monthly income of the respondents was low and with less than one-third of the respondents being members of cooperative societies. Access to credit and extension contact was low. However, most households in the area were food secure. Household size, age and educational attainment of the household heads were significant socio-economic factors affecting food security in the area. Major constraints to food security in the area were high food prices, poor access to credit and low non-farm income. It is therefore recommended that government should subsidize food materials to enhance accessibility by the households. Also, development agencies, non-governmental organizations and individuals should embark on enlightenment campaign to encourage a reduction in household sizes among the farmers. The farmers should be informed of the need to join cooperative societies in order to have access to loan facilities. Policies should aim at ensuring that institutional credit sources reduce the current high interest rate on loans and the procedural difficulties in securing loans so as to encourage farmers to access such credit facilities for increased agricultural production hence, food security.

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