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Research Article
Determinants of Food Security Among Households in Nigeria

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Abstract

Background and Objective: Although the government has demonstrated a commitment to confronting the issue of food security in Nigeria with different policies, the result indicates that the target is far from being realized, as the country is still listed among the hungry and food-insecure nations. More than 50% of the household income goes to meeting food requirements. This paper was attempted to explore the factors affecting food security status among urban and rural households in Nigeria. **Materials and Methods:** Using the econometric method, the study used the food consumption score as a proxy for food security to measure the impact of some determinants of household food security on rural and urban households in Nigeria. **Results:** The result of the ordinary least square (OLS) analysis and the multinomial log it models revealed that education, food and non-food expenditures and the number of adults have a significant positive influence on food security. However, age, gender and household size affect food security slightly and negatively. Land size was expected to be positively affect food security but it was insignificant, which can be explained by the land acquisition and ownership system of the country. **Conclusion:** The findings of this study suggest that the government needs to intensify efforts for programs that will promote the education of household heads' by improving the access of poor households to formal education, increasing income, increasing social capital and reviewing land ownership policies to allow for the transfer of land to rural house holds. These efforts will create opportunities for improving food security in the country.

Key words: Determinant of household food security, fixed-effect model, food access, food consumption score, general household survey, household food security

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Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

One of the greatest challenges facing the world in recent times is the increasing lack of access to food and the escalation of hunger and poverty[1]. Nigeria is the most populous country in Sub-Saharan Africa and is estimated to be approximately one-fifth of the total population in the region. A country fortunate to have both human and natural endowment, if not for other reasons, has the capacity to build a prosperous economy and provide for the basic needs for all its citizens. However, Nigeria is still ranked among the poor and undernourished nations of the world[2,3]. Additionally, the dwindling effect of poverty and hunger has rendered most of its populace hopeless, as more than 70% of the disposable income of poor households goes to meeting food requirements, yet not less than 31.5% of children under five years old are malnourished[4,5]. Reports state that the percentage of the Nigerian population below the hunger level increased from approximately 29% in 2000 to 33% in 2010 and imply that this increase could be the reason why achieving the 2015 goal of 14.5% below the hunger level has not been possible. Additionally, Mazia *et al*.[6] stated that in virtually all the geo-political zones of the country, 40% of the households are food insecure.

This paper aimed to identify the determinants of household food security in Nigeria using data from the 2012/13 Nigerian general household survey. In Nigeria, there are a series of studies[6-11] in the area of household food security. However, the majority of these studies were largely on smaller populations, covering a small sample size. Furthermore, regarding issues of national interest, the contribution of such studies could hardly provide the desired outcome, despite previous governments and administrations' multiple attempts and a series of methods, techniques and programmes that were employed to tackle the country's food security issue. Some of these programmes include Operation Feed the Nation (OFN), the Green Revolution (GR), the National Special Programme on Food Security (NSPFS) FAO in Nigeria through the Country Programming Framework (CPF) and Federal Government intervention in the Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites (MARKETS) phase II, which is a USAID programme. Based on the goals and expected results of these programmes, the food issue in Nigeria is now expected to have improved.

Conversely, available records have revealed that more than 14.3% of approximately 28 million people in Nigeria, based on FAO statistics[12], are undernourished. Moreover, this situation may be worsening considering the trend of abject poverty in the country, which was projected to be approximately 53.5% of the teeming population living below the poverty line of $1.9 per day, based on World Development Indicators[13,14]. Moreover, the general outcomes of these programmes are still below the expected goals. This can either be ascribed to the inability to understand the basic issues involved or the attempt to copy other strategies that function well elsewhere, regardless of the peculiarities of the country itself.

It is against this background that this study aims to identify the key factors that affect household food security in Nigeria as a whole. This study can also help to reduce the problem of policy flip-flopping and serve as a policy guide that would create a lasting solution to address food security among households in the country. To contribute to the dearth literature in the area of food security in developing countries, this study will use nationally representative data of both rural and urban households to examine the determinants of household food security in the entire country.

Concept of food security: The definition of food security, established at the World Food Summit in Rome, is "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life"[15]. The concept of food security is complex, as it goes beyond the idea of a country's ability to feed its population. From a global perspective, food security is driven by many forces, such as increasing population, the existence of arable land, water, food production, climate change and accessibility and losses[16,17]. Therefore, in an attempt to establish the factors that determine household food security, there is a need for a clear understanding of the food system itself. The food system may constitute the interaction among the components that determine human health and nutritional attainment. These components include the production, distribution and consumption of food.

The production aspect covers land acquisition and its use, soil quality maintenance, improvement of crop varieties, animal production, harvesting, etc. Distribution includes everything that happens after harvesting, i.e., distribution, processing, storing and packaging as well as marketing activities and information that explains the purchasing habit and power of consumers. Lastly, food consumption constitutes the process of cooking, processing and preparing food both for home and the community and the decisions of households regarding food. Thus, by extension, distribution practices, food choices, education and sanitation are also among the components that can best contribute to an explanation of the food system.

Table 1: Household food security status

Food consumption score	No. of rural households	No. of urban households	No. of all households	Percentage	Cumulative frequency
Food-insecure households	1,625	514	2139	45.54	45.54
Moderately food secure	1,371	768	2139	45.54	91.08
Food secure	248	171	419	8.92	100.00
Total	3,244	1,453	4,697	100.00	

Households are separated into urban and rural households, Source: Computation from the developed household food security index using panel GHS data 2012-2013

The interaction mechanism between these components of the food system dictates the behavior of the household in food-related decision-making. In addition, an understanding of a society's nutrition, culture and beliefs is heavily affected by budget constraints and market prices. Now, other variables such as climate, ecology, social and financial agrology have an additional impact on food systems.

Food security refers to a state of being nutritionally secure and healthy. The concept of food security has been and will always continue to be modified according to the needs of the people and the present predicament that best explains the current realities of the people. Factors that affect food security among households are influenced by the nature of the household and the demographic, social, economic, political and environmental factors that surrounds it. Thus, to understand the factors that determine household food security, there is a need for clarity on all of the concepts highlighted above.

According to the available literature, it was established that understanding the factors that affect food security can play a significant role in addressing the issues of food insecurity[18]. Additionally, Fawole *et al.*[19] and Zhou *et al.*[20] established a need for understanding the factors, as they differ at different levels ranging from global, regional, national and household to individual levels.

To further support this assertion, for instance, Abu and Soom[21] reported that the income of the household head, farm size and rural household size positively impact household food security, while the age of the household head and urban household size reflect a negative impact on household food security. Conversely, Arene and Anyaeji[18] reported income and age of household head as the most influential factors of household food security. Amaza *et al.*[22] also revealed that household size is the key determinant of household food security. Zhou *et al.*[20] unveiled education as the most influencing factor in a study in Pakistan; thus, desegregation of female education has a negative result. In a nutshell, each of these studies established different determining outcomes as the influencing factors that explain the household food security of the area of study.

Food security status of households in Nigeria: The food consumption score or the weight of the dietary diversity score is used to calculate the food security status by summing the total quantity of food consumed, which comprises different groups by household within a period of 7 days before the commencement of the survey. The calculation follows the steps as designed using the VAM 7-day food frequency data (see section 9.1 of Food consumption analysis)[23].

The household food security status is shown in Table 1. It reveals the state of food security among households in Nigeria from 2012-2013: 45.54 were food insecure, 45.54 were moderately food secure and 8.92 were food secure. Of the total sample, 69.06% were rural households, while the remaining 30.94% were urban households.

The arc geographical information system (GIS) map displays the spatial distribution of food security status across the country in Fig. 1. From the map, it can be deduced that areas around the southern part of the country are more food secure than are areas around the northern part of the country. It can be seen that the green and blue dots representing moderate and food secure are more concentrated around the area, while the red dots are more concentrated around the northern part of the country.

MATERIALS AND METHODS

Econometric model 1: First, the econometric model that is used to measure the impact of some determinants of household food security on rural and urban households in Nigeria is the OLS in which the impact of all the variables highlighted could be traced. The study adopts the household production theory[24,25]. The model that captures the relationship between the determinant of food security among households and food security status in Nigeria is developed following the steps of Zhou *et al.*[20] and Wooldridge[26]. The model is modified with the selection of some variables that could be found in the model and some variables from household biological and socio-economic characteristics as well as environmental factors. In this context, the FCS serves as a proxy for food security. It is given as:

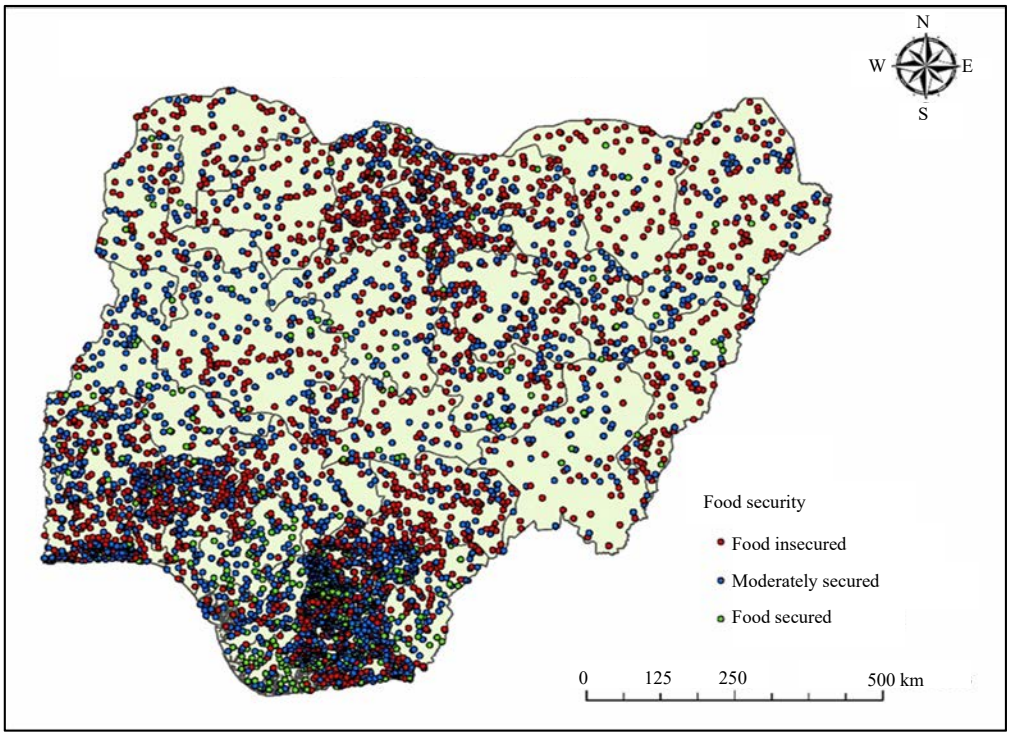

Fig.1: Food security map of Nigeria

Source: owner's computation from general household survey (GHS) data 2012-2013

$$FCS_i = \beta_0+\beta_iX_i...+...+ u_i \quad (1)$$

$$FCS_i = \beta_0+\beta_1X_i+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5 +\beta_6X_6+\beta_7X_7+\beta_8X_8+\beta_9X_9+\beta_{10}X_{i0}+\beta_{11}X_{11}+u_i \quad (2)$$

FCS_i : Food consumption score that explains the food security status of households

X_i : Vector predictors

X_1 : Sex of the household head (1 for male and 0 for female)

X_2 : Age of the household head

X_3 : Size of the household

X_4 : Land area (hectares)

X_5 : Level of education of the household head, (in years)

X_6 : Food expenditures

X_7 : Number of adults

X_8 : Number of children

X_9 : Non-farm income

X_{10} : Gifts

X_{11} : Non-food expenditures.

β_i and u_i denote the coefficients of the explanatory variables and the changes in the unobservable error term, respectively.

Multinomial logits Model: The study adopts guidelines from Wooldridge[26], Zhou *et al.*[20] and Maitra and Rao[27].

The model was used to explore the factors that are likely to contribute to determining the food security of households and those that will help people escape food insecurity. The model is specified as follows:

$$Pij = \begin{cases} 0 \text{ if } f_i \le 0 \\ 1 \text{ if } \pi \le fi \quad j=(0,1,2) \\ 2 \text{ if } \pi \le fi \end{cases}$$

P_i : Food security status

π : Threshold of food security

$$P_{ij} = P_r\{P_{i=j}\} = \frac{e^{(X_i\beta_j)}}{\sum_{i=1}^{n} e^{(X_i\beta_i)}} \quad j=(0,1,2)$$

where, P represents food security and j represents the vector of food security, which is more than the two categories that a household can fall into: 2 is food secure, 1 is moderately food secure and 0 is food insecure households). X_1-X_9 represent the vector of explanatory variable, β_x represents the coefficient and ε_i represents the error term. Thus, the model can be written as:

$$P_r([0,1,2]) = \beta_0+\beta_1X_i+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5 +\beta_6X_6+\beta_7X_7+\beta_8X_8+\beta_9X_9+\beta_{10}X_{i0}+\beta_{11}X_{11}+\varepsilon_i...1b13$$

Explanation of the predictors

Food consumption score: This represents the food consumption index constructed using the food consumption score guide as presented in the Vulnerability Analysis Mapping (VAM) 7-day food frequency data table guidelines. First, all food groups were grouped into seven categories using the formula to construct the food consumption index. The formula was developed using the Maxwell *et al.*[23] guidelines:

$$FCS = \sum_{i=1}^{7} FG_1 + FG_2 + \ldots + FG_7$$

where, FG represents food group as staples, dairy, fats/oil, vegetables, etc. and i = 1-7

The household food security status is displayed in Table 2, showing different levels of scores that are used to classify households as food secure, moderately secure and, lastly food insecure. Note the total FCS will not be more than 112, i.e., $112 \geq FCS \geq 0$, according to the scoring measurement standard (VAM) 7-day food frequency data table guidelines.

Measured variables

Age of the household head: Age of the household head is naturally expected to directly impact the labour supply of the household for the provision of the food supply. Invariably, young and agile household owners are expected to cover a large farm in cultivation compared with their aged and weaker household owners. It is also perceived that the ability and willingness to take non-farm jobs for additional income are more feasible among younger households than for older households. However, according to the findings of Anyaeji and Arene[9], the households led by older people turn out to be more food secure than households led by younger people. This is because aged people are more honest about the needs of their physical, social and farming environments. However, age may reveal a negative outcome because an aging head of household might be less productive in delegating their farm operations, which may in turn lower farm turnout and productivity. Living past the expected age is assumed to have a negative impact on the result and there is room for further investigation.

Table 2: FSC standard profile

0-21	Food insecure
21.5-35	Moderately food secure
35	Food secure

Maxwell *et al.*[23] scoring measurement standard VAM/WFP

Sex of household head: Gender has a significant role to play in the heading of the household and the provision of household food and nature has clearly placed men at a more advantageous level compared to females when looking at the roles they can play. Except where necessary or due to the high impacts of poverty, women are placed more frequently in housekeeping jobs, while the men go out to hunt for the food. According to anFAO[28] report, female-headed families have a high dependency ratio, few years of education and old household heads. The anticipated effect of this variable is positive.

Household size: The number of residents in a household explains the size of the household, which can have a great influence on determining the food security status of the household. It is predicted that as the number of households increases, the level of food security is expected to decrease because of the number of people that need to be fed but that could also amount to an opportunity for additions to the labour force that could be proactive and have a positive impact on the food supply. Therefore, the expected effect of this variable could be negative or positive.

Additionally, this variable has been separated into children and adults because the contribution to the household food security may differ, even among children and their contribution in rural households may differ from that of their urban counterparts but the expected result still may be positive or negative. To further improve the literature, the research suggests further desegregation of household size in adults and children.

Children: This constitutes members of the household below the age of 18 as the minimum age for adults and the maximum age for children in Nigeria. It is expected that an increase in the number of adults increases the opportunity of the household to be food secure; thus, the more adults in the house, the more likely the household is to be food secure and the expected effect of this variable is positive.

Adults: This constitutes a member of the household above the age of 18, which is considered the minimum age of adulthood. It is expected that the more children that are born into the house, the more likely the household is to be food insecure. Thus, the more children in the house, the less likely the household is to be food secure and the expected effect of this variable is negative.

Food expenditure: According to Babatunde *et al.*[29], this refers to the total summation of earnings by household from both

non-farm and farm sources. Moreover, as the household head acquires more gainful jobs, the better the possibilities of the household being food secure. Thus, as the income of a household head increases, food provision and access to quality and quantity of good food are improved. The anticipated effect of this variable is positive.

Education of household head: The impact of education on household food security cannot be overemphasized. It is expected that household heads with higher education levels are most likely to earn higher wages. It is expected that education will have a positive influence on food security. With the increase in the level of education, more avenues will be open, such as modern farm technology, which will have a direct bearing on the production level.

Farm size: This refers to the total area of land that can be cultivated for the production of food, cash crops and raw materials by households and hectares are the main unit of measurement. Land size greatly determined the expected outcome of food production. Thus, it is expected that a household with a larger farm size will be more food secure than those with a smaller farm size. It is expected that a positive relationship will exist between food security and farm size.

Non-food expenditure: This explains additional expenses for non-food items. The level of this non-food expenditure may greatly influence household food security. Thus, this can either take the form of a positive or negative depending on the outcome of the activity. It is obvious that engagement in non-food expenditures will definitely consume money that is supposed to be used for food and that will no doubt go a long way in influencing the food security situation of the household. Consequently, if households spend more of their income on non-food items at the expense of food materials, more particularly if the wage they earn cannot cater to the foregone food expenses, their food security situation could be worsened. The expected effect of this variable on food security could be positive or negative.

Non-farm activity: This explains additional work that household owners may engage in addition to farming to supplement income. The level of this non-farm activity greatly influences household food security. Thus, this can either take the form of positive or negative depending on the outcome of the activity (Unpublished Data). It is obvious that engagement in off-farm activities will definitely bring in money, which will go a long way in complimenting the food security situation of the household. Consequently, if farmers spend more of their time on off-farm activities at the expense of working on their farm, particularly if the wage they earn does not commensurate with the foregone farm income, their food security situation could be worsened. The expected effect of this variable on food security could be positive or negative.

Quantity of own farm production: This is the total quantity of food and cash crops produced by households from their own farm measured in kilograms. An increase in the quantity of household production increases the probability of food security[30]. The expected effect of this variable on food security is positive.

Gift: This comprises all forms of transfers that are received by households in the form of gifts, either in cash or in food, to enable them to meet their food requirements.

Table 3 Presents the measured variables and their units of measurements that were employed in the model guided theory[24] and the existing literature on the factors affecting household food security

Source of data: The data for this study was collected from the second wave of the General Household Survey (GHS) of a nationally representative sample of households in Nigeria conducted by the Nigerian Bureau of Statistics in association with the World Bank in 2012/2013.

RESULTS AND DISCUSSION

Factors affecting food security on household farmers: The result of the variance inflation factor (VIF) is less than ten along all the variables, which indicates the nonexistence of multicollinearity among the variables in the model. To address the possible problem of heteroscedasticity in the model, a robust standard error was employed, using the Huber-White heteroscedasticity robust estimate against the normal conventional standard error for all variables. This yielded a valid standard error, t statistics and F statistics.

The results of an ordinary least square regression, shown in Table 4, have revealed a significant influence on the food security status of the households as a result of improvement in the factors affecting children, adults, gift food expenditures and non-food expenses, among others. Household size is an important factor because the number of people in the household determines the consumption pressure on household resources, most importantly food, so a high

Table 3: Measurement of variables

Variables	Measurements
Food consumption score	A proxy for household food security status.
Food security status	Measures the household food security status in 2012/2013
Demographic factors	
Household size	Total number of people living in the household
Adults	The proportion of people between 18 years old and above in the household
Children	The proportion of household members that are less than 18 years old
Age	Age of the head of the household
Gender	Sex of the head of the household
Social factors	
Years of education of the household head	Average years of education of adult members of the household
Environmental factors	
Farm size	Hectares of farm owned by the household
Economic factors	
Non-food expenses	Share of household income spent on non-food items
Non-farm income	Share of household income from all non-farm activities
Food expenditure	Share of household income that is spent on food
Gift	This comprises gifts received and enjoyed by members of the household

Table 4: OLS estimates of the impact of factors affecting food security in households

	Coefficient		
Explanatory variables	All households	Urban households	Rural households
Adults	0.87*	0.49	0.09
	(0.049)	(0.088)	(0.060)
Children	-0.125***	0.01	-1.56***
	(0.047)	(0.848)	(0.058)
Years of education of the head of the household (yrs_edu)	0.154***	0.168***	0.143***
	(0.19)	(0.36)	(0.023)
Household size (hh_size)	-0.216***	-1.42***	-0.88***
	(0.041)	(0.265)	(0.191)
Household Head Age	-0.006	0.002	0.009
	(0.005)	(0.011)	(0.006)
Gender	-0.369	-0.856	2.33
	(0.321)	(0.552)	(0.397)
Farm Size	0.26	0.28	0.42
	(0.276)	(0.063)	(0.034)
Non-Far_Inc.	0.004	-0.004	0.042
	(0.019)	(0.036)	(0.022)
Non-Food (non food)	0.577***	1.5	0.543***
	(0.071)	(7.5)	(1.17)
Food expenditure (tot food)	2.28***	0.687***	2.45***
	(0.27)	(0.219)	(0.127)
Gift	0.949***	1.479***	808.000***
	(0.81)	(0.193)	(0.089)
Zonal Dummy	-4.76***	-3.335***	-5.428***
	(0.246)	(0.457)	(0.297)
Observation	4694	1452	3242
F test	64.36***	16.93***	44.94***
sR2	0.4749	0.4942	0.5185

Households are desegregated into urban and rural households. *,**,***denotes 10, 5 and 1% levels of significance respectively. Values in parentheses represent robust standard errors.

dependency ratio is a good indication of food insecurity. Ibok *et al.*[30] stated that household size is positively related to food security but when further disintegrated into children and adults, a different trend in food security is revealed.

Children have a negative relationship with food security in rural areas and insignificant food security in urban areas, indicating that the higher the number of children in the household, the more they are exposed to food insecurity and this trend is more predominant in rural areas. In contrast, the number of adults in the house proves to be significant, indicating that the presence of more adults in the household will increase food security by 8.7%. This also explains why as the household size increases, the level of income share per person continues to decrease, which exposes the household

to a greater probability of being food insecure. This is also the view of Babatunde *et al.*[29], who found that an increase in household size raises the likelihood of households becoming food insecure. Years of education of both the head of the household and family members of the household will improve food security, which indicates that an increase in the number of years of education of the head of the household can improve food security by 15.4%, which is consistent with the findings of Zhou[11] and Ibok, *et al.*[30]. Moreover, the educational status of a household can improve skills, increase productivity and enhance food security. Xing and Gounder[31] supported investment in education, which is considered relevant in reducing poverty and can therefore enhance food security in a positive manner; the reason is that exposure to education enhances one's skills and capabilities to adopt new and improved technology to rapidly increase food production, storage and selection, which will lead to increased chances of being food secure. Food expenditures, non-food expenditures, gifts and years of education prove to be the most influential factors of food security among all the variables in households in Nigeria.

The results of food security have different outcomes; the household is either food insecure, on the border (moderately) or food secure. The OLS estimates may reveal the relationship between the predictors of food security but may not have an actual impact on different outcomes of food security (moderate level, secure level), which is why multinomial logit is employed to bring out these disparities.

Household food security refers to household owners being food secure or at least close to food secure (moderately secure);regardless, what is important is how they try to maintain their status in sustaining access to sufficient and safe food. In any case, the bottom line is the struggle against hunger and poverty, which is very severe among households in the developing world. The results of the multinomial logit model presented in Table 5 which reveal that the predictors of the household's food security have a significant effect on the change in the food security status of households in Nigeria. The factors are food expenditures, gifts, non-food expenditures, amount of land, years of education and location, which are among the most significant factors in explaining the position of food security among the households in the country, viewing food insecure households as the baseline. The purchasing ability of the household greatly explains the likelihood of sustaining their food status or being food secure, as well as the possibility of improving their status from borderline food secure to totally food secure. From the results, if the food expenditure is significant (odd ratio = 7.652 and p = 0.000), households would be more likely to escape food insecurity as food expenditures are decreased. Next, a gift or transfer from an acquaintance or grants in the form of food greatly affect the food security status of the household, which is more pronounced in rural areas (odd ratio = 8.584 and p = 0.00001) compared with that of households in urban areas (odd ratio = 3.052 and p= 0.00001). This established gift is more prevalent among rural households than urban households. Non-food expenditures cover other household expenses that have a direct bearing on the welfare of the household, for example, health and education. This result indicates (odd ratio = 1.494811 and p = 0.000001) that food expenditure alone is not the only determinant of food security, as non-food expenditures also contribute approximately 49%, which is quite significant. This also agrees with the findings of Zhou[11] and Ibok *et al.*[30] that non-food expenditures also contribute to determining the food security of households.

Land size is yet another crucial and important factor in explaining food security status in the country. Additionally, land is more influential among rural households, which may be explained by the fact that agriculture remains the largest employer of labour in the country. According to these findings for rural areas (odds ratio = 2.715 and p = 0.00001) and urban areas (odds ratio = 1.075 p = 0.000), land size is more prevalent in explaining the likelihood of being food secure in rural areas than in urban areas. House size has a negative effect on food security in rural areas (odds ratio = 1.073 = p = -0.007) and urban areas (odds ratio = 0.993 and p = 0.071). This signifies that the impact is more prevalent in the rural sector than in the urban sector.

Another factor is the location, which indicates a negative effect, as the country is divided across two major zones; the dummy variable is used to represent the two zones of the northern and southern parts of the country, with 1 representing north and 0 representing south. Since 1 indicates the north, the result signifies a less likely effect that people located in the north will be food secure compared to those settled in the south, (the odds ratio = 0.088 and p = 0.0001)which could be expressed more in map 001.

Years of education indicates a positive impact (odds =1.020201 p = 0.00001), although it is very negligible; this may be linked to current unemployment levels and the downfall in the literacy level in the country.

This article reported the factors affecting food security for households. It has been established that the years of education of the household head, the amount of food, non-food spending, land size and location exert greater influence on food security in households. The government therefore needs to embark on initiatives and programmes that can provide alternative revenue for households, such as

Table 5: Multinomial logit results of the impact of factors affecting food security status

	Coefficient		
Explanatory variables	General household (1)	Urban household (1)	Rural household (1)
Adults	0.007	-0.423	-0.040
	(0.31)	(0.036)	(0.051)
Years of edu. Head	0.021***	0.020	0.020***
	(0.007)	(0.014)	(0.008)
Age of the Head	0.0004***	0.006***	-0.001
	(0.0002)	(0.005)	(0.002)
Food expenditure	1.118***	1.256***	1.074***
	(0.69)	(0.131)	(0.070)
Non-farm_Inc.	-0.007	-0.132	-0.003
	(0.007)	(0.139)	(0.007)
Gender of the head	0.39	-0.025	0.65
	(0.115)	(0.004)	(0.142)
Children	0.022	0.54	-0.090**
	(0.017)	(0.34)	(0.042)
Gift	0.2915***	0.557***	0.230***
	(0.321)	(0.822)	(0.035)
Non-food exp.	0.214***	0.277***	0.193***
	(0.031)	(0.692)	(0.035)
Household Size	0.114	-0.007**	-0.071*
	(0.015)	(0.031)	(0.12))
Farm size	0.57***	0.070**'	0.062***
	(0.010)	(0.237)	(0.012)
Zonal dummy	-1.165	-0.924***	-1.250***
		(0.174)	(0.110)
	Coefficient		
Explanatory variables	General household (2)	Urban household (2)	Rural household (2)
Adults	0.014	-0.32	0.34
	(0.029)	(0.13)	(0.039)
Years of Edu. Head	0.017	0.08***	0.10***
	(0.12)	(0.02)	(0.14)
Age of the Head	0.002	0.02**	0.01***
	(0.004)	(0.01)	(0.004)
Food expenditure	2.035***	0.25***	0.41***
	(0.123)	(0.11)	(0.12)
Non-Farm Inc.	-0.018	-0.004	-0.018
	(0.011)	(0.025)	(0.014)
Gender of the head	0.018	-0.261	-0.020
	(0.199)	(0.337)	(0.188)
Children	-0.020	0.047	0.046
	(0.028)	(0.499)	(0.037)
Gift.	1.410***	2.151***	1.116
	(0.120)	(0.227)	(0.142)
Non-food exp.	0.402***	0.476**	0.386***
	(0.058)	(0.109)	(0.071)
Household Size	0.017	-1.001	0.031
	(0.012)	(0.495)	(0.034)
Farm size	0.096***	0.999***	-0.73*
	(0.018)	(0.037)	(0.023)
Zonal dummy	-2.516***	-1.267***	-2.430***
	(0.170)	(0.284)	(0.218)
Observation	4489	1405	3084
Wald-Test	287***	177***	343***
Pseudo R2	0.11	0.08	0.08

Dependent Variable: Food consumption score (proxy for food security status of the household), Households are desegregated into urban and rural households, *,**,***denote 10, 5 and 1% levels of significance, respectively. Values in parentheses represent robust standard error

farm-related enterprises (bee production, poultry and other alternative farms) or off-farm (dyeing, sewing, welding, etc.), as well as social security, an unemployment allowance and access to employment opportunities for the poor,

food-insecure households. Furthermore, there is a need for education, particularly for families in rural areas, given the significance of knowledge and the roles it can play in raising the living standards of individuals who obtain it; this can be achieved by increasing investment in education. The government should also intensify efforts to educate the family on the risk of growing their family size without adequate food options, which has a serious risk of increased child mortality, social hunger vices, etc. Finally, it is suggested that policymakers understand society's behavior and culture before any policy recommendations are imposed on them. However, the studies cover a wide range of households, making it more applicable to issues of household food security in Nigeria compared to those conducted in similar areas but with smaller sample sizes. Although, a similar study in the same vein but using panel data might provide more robust and accurate information.

CONCLUSION

The main factors that affect household food security are the number of years of education of the household head, the amount of food, the amount of non-food expenditures, land size and location. Other factors that influence the food security of households, either slightly or negatively, are household size and the number of children. Therefore, the study suggests the need for both government and international organizations as well as donor agencies to pay more attention specifically to the food expenditures of households and provide them with alternative social security allowances, as many poor do not have easy access to employment. The second most important factor is education and homeowners should be taught about the importance of knowledge and its roles in raising the standard of life of the people benefitting from it. Another crucial factor is gift transfers. Nigeria is a highly religious country and the offering of grants, charity and social transfers is rooted in the souls of the Nigerian people; therefore, a little encouragement and more teaching will enhance the outcomes. Additionally, a prompt and judicious application of the realized process will also boost the performance of the sector.

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